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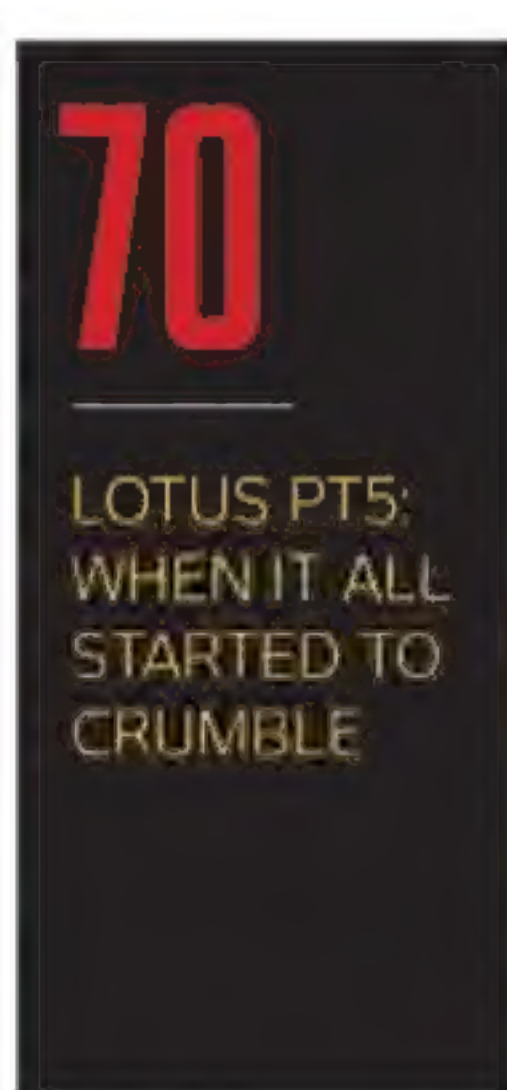
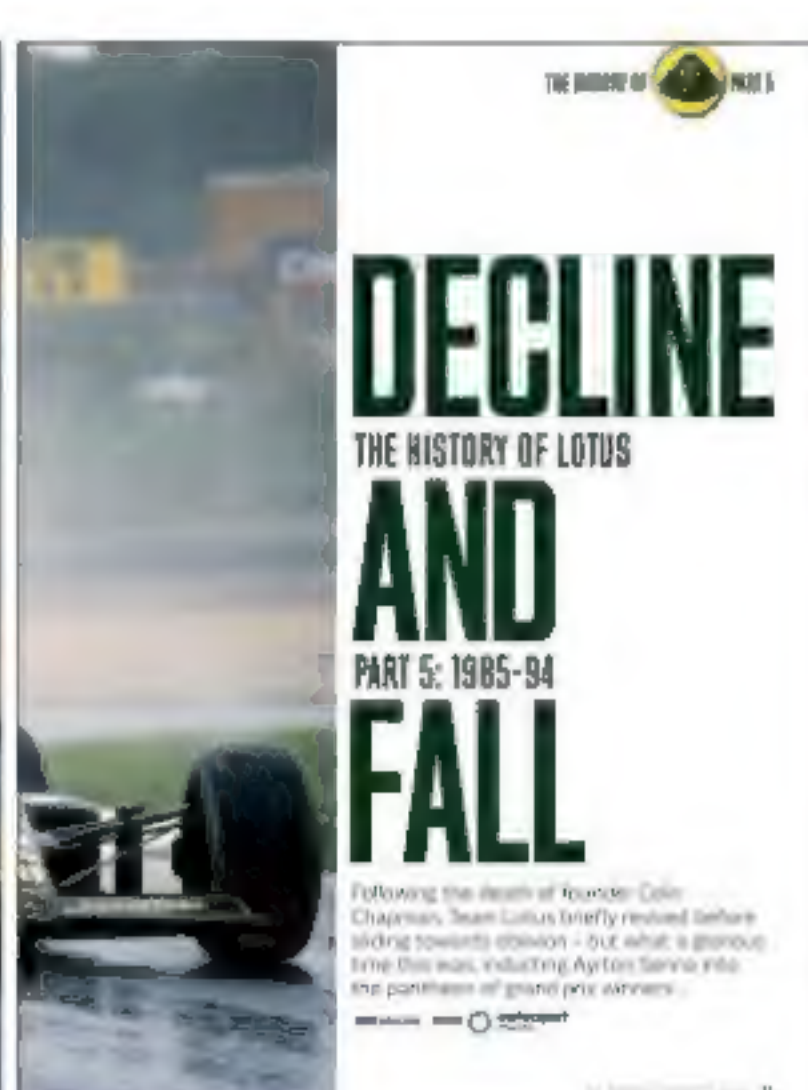
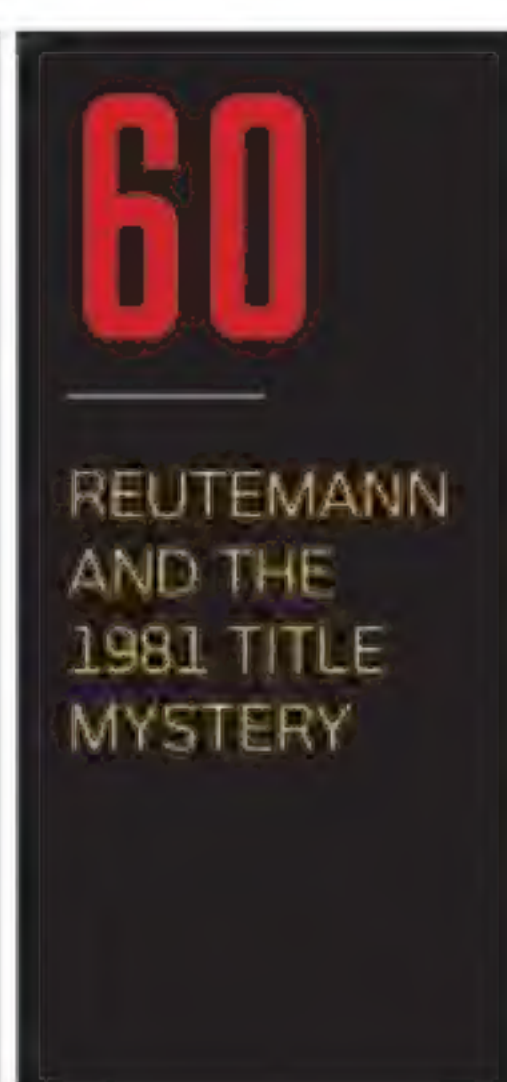
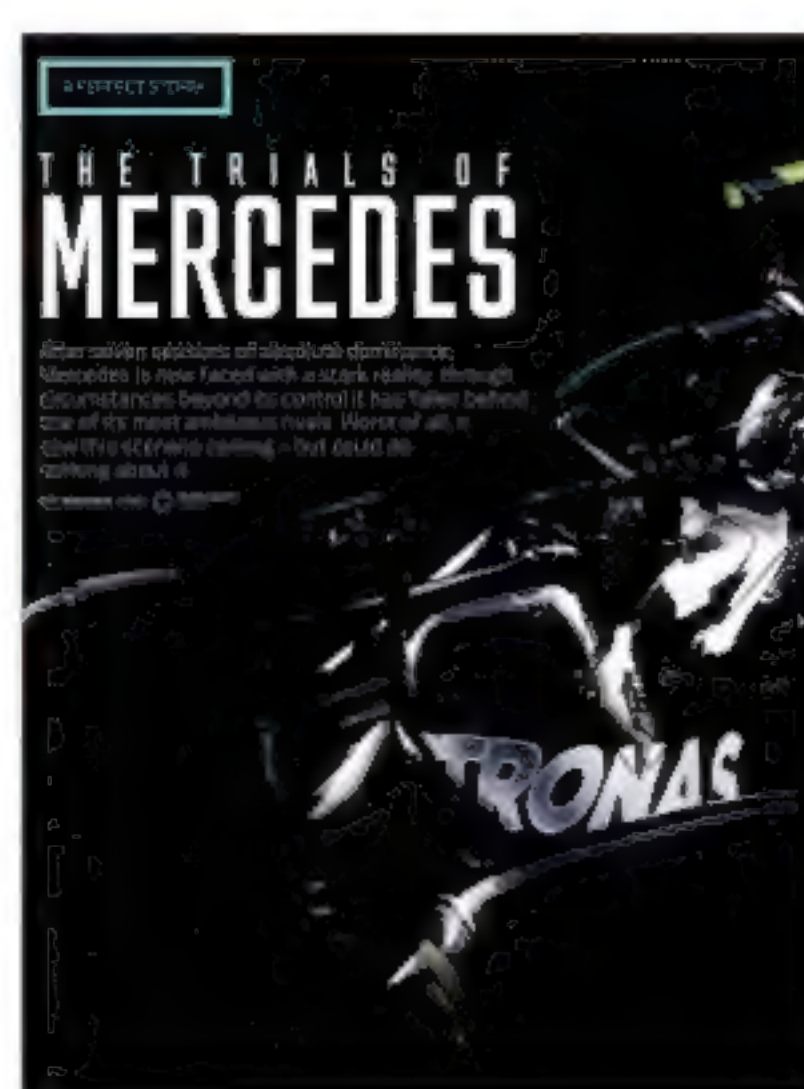
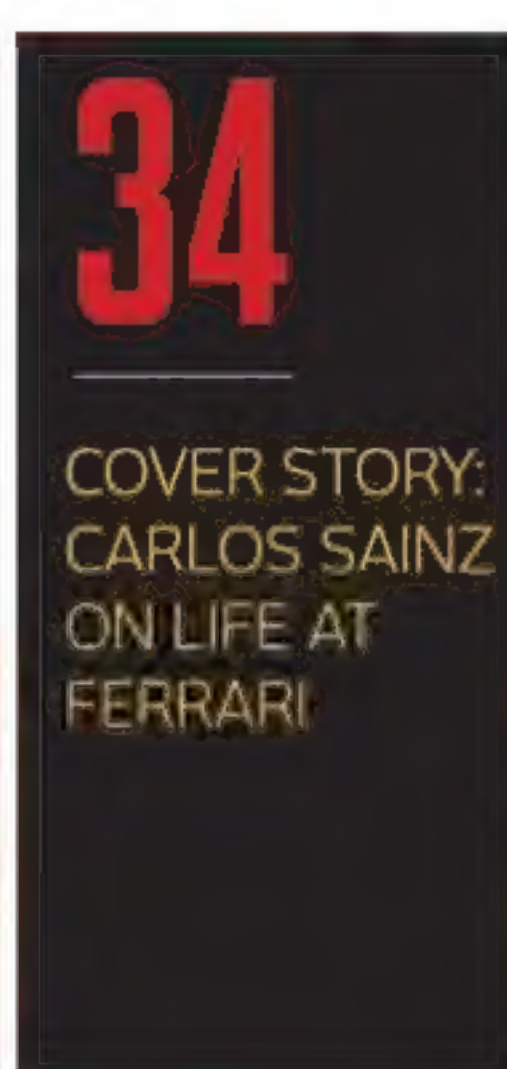
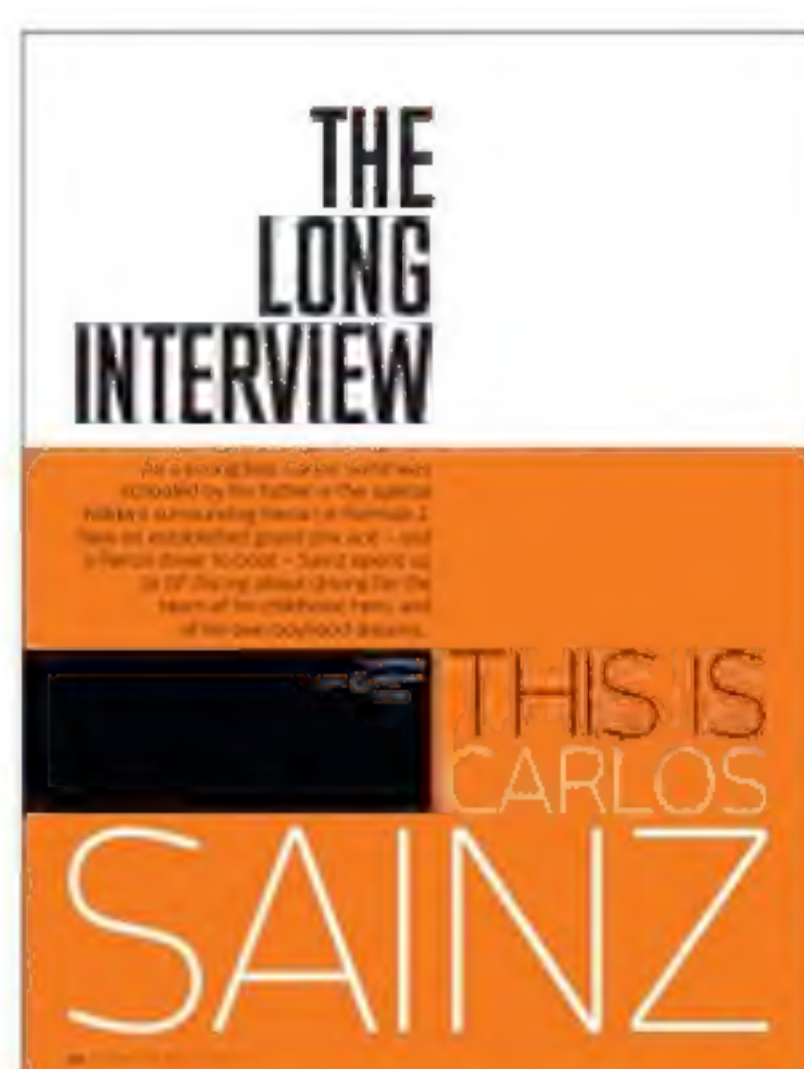
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Ben
Anderson

@BenAndersonF1



The inevitable finally happened...

Formula 1's August summer break is here, and hopefully a short holiday will help cool the jets of those – on both sides – who've become inflamed by Lewis Hamilton and Max Verstappen finally putting niceties aside and going at each other full pelt on the track.

What happened on lap one of the grand prix at Silverstone was almost inevitable. Verstappen is the first of F1's new generation to be in position to genuinely threaten Hamilton's pre-eminence. Max and Red Bull sense their time is now and have been in full attack mode since Bahrain. Not since Nico Rosberg's final season has Hamilton been so on his back foot – and arguably never has he faced a rival of Verstappen's ability and aggression combined.

The psychology is fascinating, and here you had a genuine line-in-the-sand moment. Twice this season already – at Imola and then Barcelona – these two went side-by-side on lap one with Max on the inside and Lewis on the outside. Each time Verstappen placed his car in such a way as to force Hamilton into evasive action to avoid a crash.

This time, Lewis had the inside line and the momentum. He may not have got the move done had they avoided contact – there's every chance his entry speed would have carried him in too hot in any case – but the opportunity to pass was undoubtedly there, and this time Lewis turned tables on Max, asking his rival to make the choice.

Max is not a driver who yields. Witness how he

went four wheels off-track at Abbey to keep the lead after the start, then squeezed Hamilton as they went side-by-side on Wellington Straight and towards Copse. The body language of Verstappen's car said 'thou shalt not pass', while Hamilton – rather like Alain Prost against Ayrton Senna in 1989 – finally decided to stand up to the on-track bullying. Irresistible force met immovable object and thus a social media war began.

This seminal moment also lifted the lid on simmering tensions between Red Bull and Mercedes – the off-track battleground of pitstop technology and flexi-wings spilling over into hyperbolic howls of protest about dirty driving, professional fouls and the ethics of lobbying stewards while they're making decisions.

The real ugliness lay not in the incident itself, but in the aftermath. So-called fans pouring vitriol on each other and the drivers; Hamilton again being subjected to vile racist abuse on social media; Verstappen and Red Bull stoking tensions by accusing Hamilton of driving dangerously and behaving disrespectfully.

Peter Hain, vice-chairman of the All-Party Parliamentary Group on F1, felt moved to step in, telling Reuters news agency that people should mind their language in the heat of the moment. Time now for a period of calm reflection, while looking forward to what we all hope will be a humdinger of a second half to this season.

Contributors



ANDREW BENSON

The perfect storm that faced Mercedes this season (p46) and Carlos Reutemann (p60) come under the gaze of BBC Sport's chief F1 writer



DAMIEN SMITH

The demise of Team Lotus is the focus of part five of Damien's superb history of the outfit founded by Colin Chapman (p70)



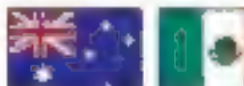

LUKE SMITH

Autosport's F1 reporter chats with Esteban Ocon about the Frenchman's first long-term deal in Formula 1 (p54)



STUART CODLING

In this month's NTWAC feature Codders investigates the potential of BRM's P201 and why it turned out to be a failure (p82)

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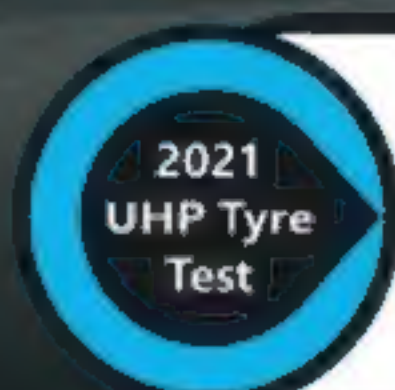
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Lewis enjoys his golden moment

One of the highlights of shooting the British Grand Prix is the podium ceremony at the end, because the trophy is so beautiful to photograph. Unusually there are two trophies for this race: one the driver gets to keep, and this magnificent silver-plated Royal Automobile Club trophy which goes back to the RAC Club. Lewis absolutely loves it, as you can see.

We were allowed more freedom of movement in the pitlane at this race because Silverstone has a wide grass verge with plenty of space. I was quite far away, even for a 500mm lens, but the power of Canon's R5 lets you crop in and still get a good high-res image.



Photographer
Glenn Dunbar

Where Silverstone, UK

When 5.22pm, Sunday
18 July 2021

Details Canon EOS R5
500mm lens, 1/1600th @ F7.1



RICHARD MILLE

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F1's cornucopia of colouration

Enjoying a little bit more freedom of movement this weekend thanks to the Silverstone pitlane's big grass verge, like many photographers I took the opportunity to expand my range beyond the garage area of the team I'm shooting for – McLaren in my case.

After the new sprint race on Saturday evening all the cars were lined up ready for scrutineering, and there was something about their alignment and the variety of colours that seemed ripe for a nice long-lens shot. After so many years of predominantly drab liveries – lots of grey and white – it's very pleasing to see all these cars in bold primary colours.



Photographer
Steven Tee

Where Silverstone, UK
When 6.54pm, Saturday
17 July 2021

Details Canon EOS-1D MkII,
400mm lens, 1/1000th @ f6.3



Friday evening's qualified success

The shake-up of the weekend schedule to accommodate the new 'Sprint' event on Saturday afternoon meant qualifying was shunted to Friday evening, which meant the opportunity to work with a different quality of light than usual.

I'd found this spot last year when our movements were limited and I was able to go there again, even though my team's garage has moved, since the photographers now have a bit more freedom to move up and down. The cross-lighting and the colour of the ad hoardings, together with both Alpines coming out at once, combine for a nice graphic effect with the slow shutter speed.



Photographer
Glenn Dunbar

Where Silverstone, UK

When 6.22pm, Friday
16 July 2021

Details Canon EOS R5
28-70mm lens, 1/10th @ F11



Flying the flag at Silverstone

Working as the team photographer for an iconic British brand at the British Grand Prix was a great experience – you can see the merchandise colonising the grandstands already – and I wanted to capture the moment by incorporating the one-off livery which incorporated the Union flag.

It was a case of getting down as low as possible, but not too low, otherwise the screen would have obscured Seb Vettel's eyes, which was where I wanted to have the focal point. Then Sebastian just glanced off to his right and I hit the button – it works so much better than if he was just looking straight ahead.



Photographer
Glenn Dunbar

Where Silverstone, UK

When 3.06pm, Saturday
17 July 2021

Details Canon EOS R5
28-70mm lens, 1/14000th @ F2

The sun shines on the faithful

After so many races behind closed doors or with very few spectators allowed in, it was a bit of a shock to the system to see Silverstone so packed. The atmosphere was truly remarkable, especially when Lewis raised the roof by chasing down and passing Charles Leclerc for victory.

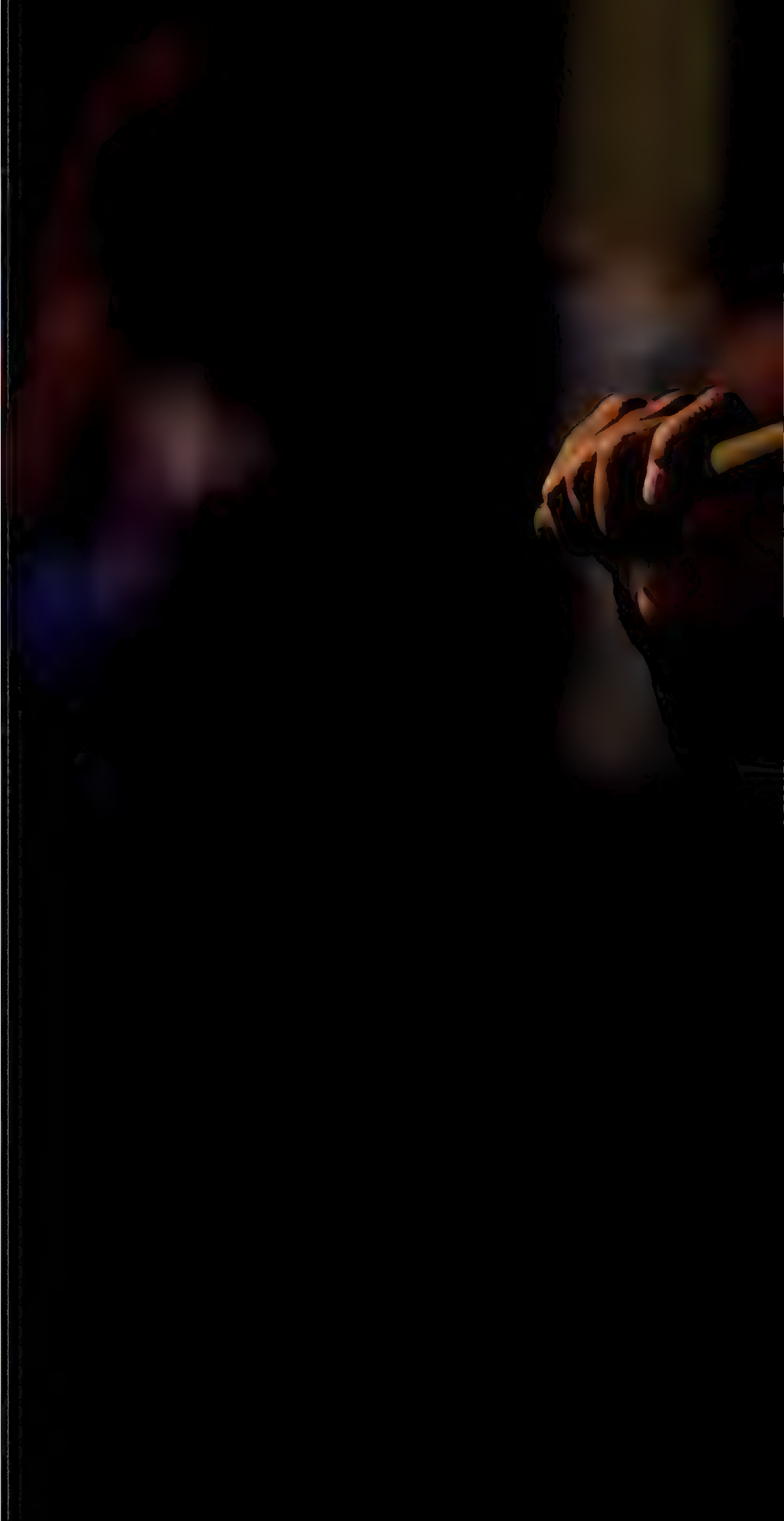
We were blessed with nice weather and great light. I chose to photograph parc ferme side-on by going along the side of the Armco. The sunlight was so intense that every shot was bound to be very contrasty, and I got this lovely moment where Lewis turned towards the fans and the sun picked out his face and the flag he was waving.



Photographer
Zak Mauger

Where Silverstone, UK
When 5.08pm, Sunday
18 July 2021

Details Canon EOS-1DX MkII
600mm lens, 1/640th @ F4





HAMILTON EXTENDS TO 2023

01 **Seven-time world champion** Lewis Hamilton has signed a new two-year contract with Mercedes which will keep him in Formula 1 until the end of the 2023 season. The timing of the deal – announced at the beginning of July – is significant, since it is the earliest Hamilton has committed since 2015, when a three-year deal taking him to the end of 2018 was announced in the run-up to the Monaco Grand Prix weekend.

By contrast, Hamilton ended last season out-of-contract and only in February reached a one-year deal with Mercedes covering 2021. Negotiations for that had been held up by the practicalities of meeting face-to-face during the pandemic, the ultra-compressed nature of the 2020 season, and then both Hamilton and team boss Toto Wolff contracting Covid. This time they began talking in May.

Early completion is an indicator of how seriously both team and driver are approaching the current, closely fought season: neither party wanted or needed the distractions which naturally attend the process of contractual horse-trading. *GP Racing* understands that while Hamilton took a pay cut this season owing to the effect of the pandemic on Mercedes' willingness to spend, his new contract restores his salary to around £40m per year.

"As we enter a new era of F1 from 2022 onwards," said Wolff, "there can be no better driver to have in our team than Lewis. He is at the peak of his powers. We're relishing the battle we have on our hands this year – and that's why we also wanted to agree this contract early, so we have no distractions from the competition on track. I've always said that as long as Lewis still possesses the fire for racing, he can continue as long as he wants."

While Hamilton said at the beginning of the season that he expected to continue in F1 beyond this year, there has been much speculation about whether he remains motivated enough to continue competing at the highest level, especially with a new technical formula in the offing. His performances this season appear to have addressed those questions – and in any case, Hamilton is at a point in his career where he is considering his legacy. He has spoken in recent years about wanting to make a lasting impact beyond his achievements in F1's record books; last year he set up the Hamilton Commission to improve representation in motorsport, and his continued presence enables him to drive such projects forward with due prominence.

"We still have a lot to achieve, both on and off the track," said Hamilton.

While the established wisdom in motor racing has it that drivers' on-track performances suffer when they invest energy in off-track interests, Mercedes has given Hamilton free reign to engage in his passions such as music and fashion and, increasingly, social justice. The burgeoning collection of trophies they have achieved together suggests that no such loss of focus has eventuated.

Arguably, in fact, Hamilton's freedoms have enabled him to reach ever higher levels of competitiveness on the racetrack and this, together with the team's energetic support for his diversity activism, has strengthened the bond they have.

"I'm incredibly proud and grateful of how Mercedes has supported me in my drive to improve diversity and

equality in our sport," said Hamilton. "They have held themselves accountable and made important strides in creating a more diverse team and inclusive environment."

Hamilton's decision to carry on is also good news for the commercial rights holder, which acquired the rights to F1 through debt and has had to re-engineer its finances significantly in order to weather the loss of income

through race cancellations last season. Even Max Verstappen, who commands the highly visible 'Orange army' which attends most European grands prix, is by an order of magnitude less powerful in terms of global recognition and box office appeal.

"This is fantastic news for Formula 1 and I am delighted that Lewis will stay in F1 for at least another two years," said F1 CEO Stefano Domenicali. "What he has achieved in this sport is incredible and I know he has more to come. He is a global superstar on and off the race track and his positive impact on Formula 1 is huge."

"AS WE ENTER A NEW ERA OF F1 FROM 2022 ONWARDS, THERE CAN BE NO BETTER DRIVER TO HAVE IN OUR TEAM THAN LEWIS. HE IS AT THE PEAK OF HIS POWERS"

TOTO WOLFF

JURY STILL OUT ON SPRINT QUALIFYING

02 **At Silverstone, the circuit where** the world championship began in 1950, Formula 1 trialled a radical and controversial new qualifying format which may be expended to more races should two further evaluations in 2021 be deemed successful.

'Regular' qualifying was moved to Friday evening and used to determine the grid for a 100km 'Sprint' on Saturday afternoon which both awarded points for the top three finishers and set the grid for the British Grand Prix proper. ►

02 | MIXED RESPONSE TO TRIAL
OF NEW SATURDAY FORMAT

03 | MORE RACES UNDER
COVID THREAT



Hamilton has signed
a new deal that
commits him to
Mercedes and F1
until the end of
the 2023 season

While the idea of setting the grid by means other than pure laptime has set purists' teeth gnashing (see Flat Chat, p106), the architects of the concept argue it benefits the race weekend overall by offering more on-track excitement for spectators, both trackside and at home.

"There was lots of action," said F1 managing director Ross Brawn after the inaugural sprint event. "People are now understanding it's a complete weekend. We had a great day yesterday, a great day today, and I'm sure we're going to have a great day tomorrow. So three days of action. And I don't believe we have diluted it at any stage; we've only added to it."

"We will go away and review everything, take some time, talk to the teams and drivers, discuss it with the FIA and see if there are things we can polish, but I don't think we should change anything fundamentally. I think the concept is good. The terminology of the event is a little challenging. Some call it sprint qualifying, some a sprint race, we need to tidy up things like that. There are things we need to evolve, nothing major."

While having just one practice session ahead of qualifying adds an element of jeopardy, detractors have pointed out

The first sprint event seemed to go down well, but didn't provide a huge amount of variation at the sharp end of the field

that running FP2 under parc ferme conditions on Saturday lunchtime – ie with no changes permitted to the cars – renders it of little value for the teams, though it gives spectators an opportunity to see F1 cars running ahead of the sprint. The 100km sprint itself offered little spectacle after the opening lap, leading some to suggest the format should be limited to specific tracks.

"It's good we have these trials now this year for three weekends," said McLaren team principal Andreas Seidl. "It's good also to take our time, together with the fans and our partners and all teams, with Formula 1, with the FIA, to analyse exactly how this went and make conclusions based on that."

"That is just an initial view. I think it's a good idea to only use it for specific events and tracks for a different format. I don't see, for example, it being the standard for all weekends."

Seidl pointed out that the weekend panned out more or less exactly as his team had expected in terms of strategy and tyres. As part of the sprint format, the requirement for drivers in the top 10 to start the grand prix on the tyres they used to set their fastest times in Q2 was dropped. Given a free choice, all but one of the drivers on the grid – Red Bull's pitlane starter Sergio Pérez – began the grand prix on mediums.

As such there was little strategic variation in what was generally a one-stop grand prix, and the sprint served to ratify the pecking order in terms of race pace. For McLaren, that meant it went into Sunday knowing neither of its drivers would be able to catch Charles Leclerc's Ferrari, hence Seidl's verdict that there were "no big surprises and no big learnings from the sprint race that changed anything for the race".

The teams, of course, are not the target audience. "It is for the fans," said Lando Norris, "to give them more to watch and look forward to every day. If they enjoyed it, I'm happy."

"I DON'T BELIEVE WE HAVE DILUTED IT AT ANY STAGE; WE'VE ONLY ADDED TO IT"

ROSS BRAWN



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NEXT MONTH*



BELGIAN GRAND PRIX 1991: DEBUT OF A LEGEND

A never-before-told, behind the scenes, story of Michael Schumacher's first Formula 1 race

ON SALE

AUG 26

- > All of Michael Schumacher's Spa F1 wins
- > Now That Was A Car Jordan 191
- > Mika Häkkinen: arrival of Schuey's greatest rival
- > Mick Schumacher and Seb Vettel: the legacy continues

PICTURES: STEVE ETHERINGTON, MOTORSPORT IMAGES ARCHIVE
*CONTENT IS SUBJECT TO CHANGE

MORE RACES MAY FOLLOW AUSTRALIA

03 While Formula 1 has coped exceedingly well with the chaos wrought by the pandemic so far this season, the commercial rights holder is leaving nothing to chance after the Australian Grand Prix promoter became the latest to pull out of hosting an event. F1 remains determined to run a 23-round calendar even if the final shape of the itinerary is not as originally billed.

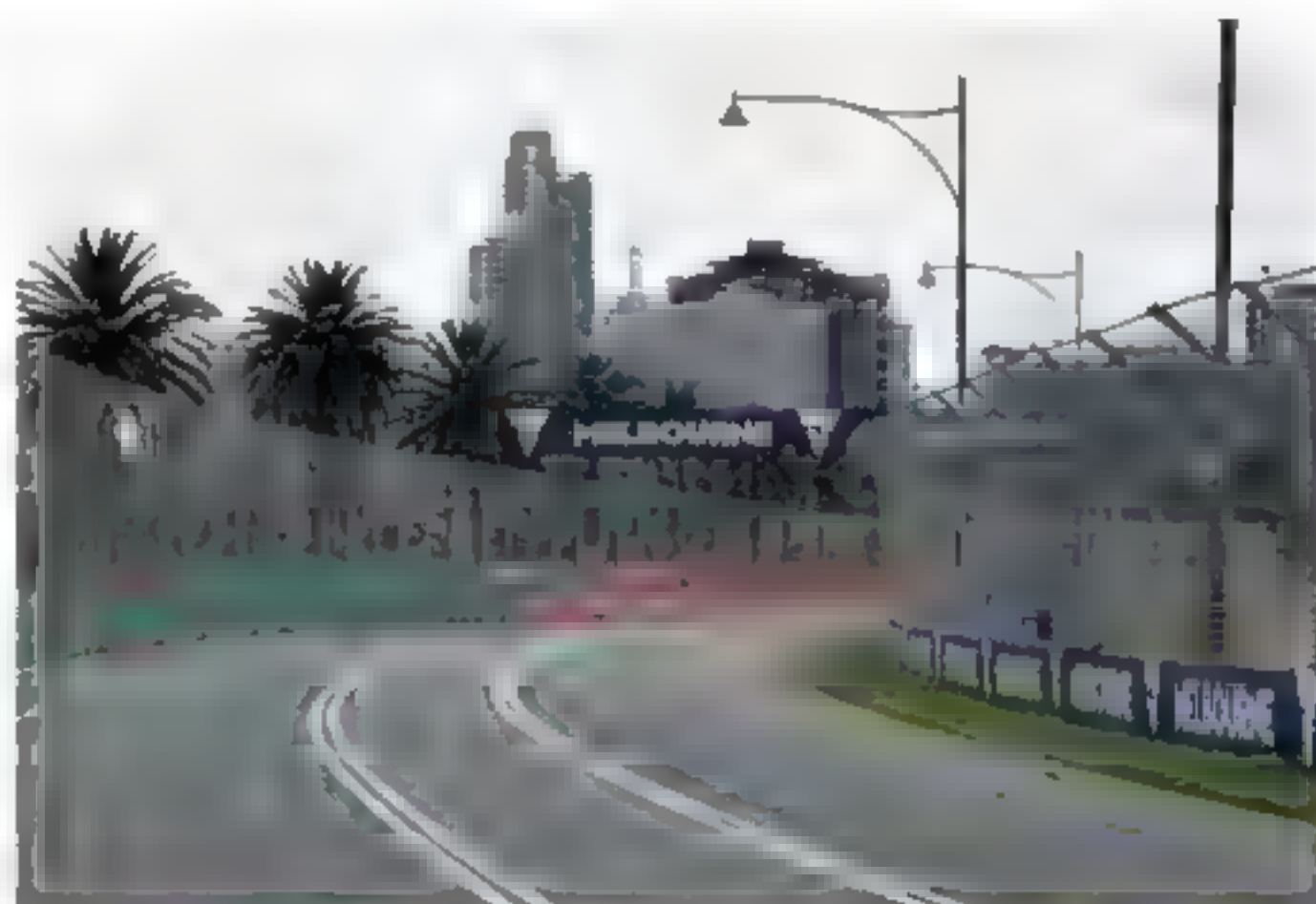
Running back-to-back events at the Red Bull Ring enabled F1 to maintain continuity after the Canadian GP was cancelled and UK government restrictions prevented Istanbul Park in Turkey from filling the gap. Istanbul eventually slotted in to replace the Singapore GP when that fell out of the running. The Australian round was originally scheduled to open the season in March and was postponed to November before being cancelled entirely.

While no replacement for Melbourne had been announced as *GP Racing* went to press, we understand other venues are being lined up as replacements owing to the possibility of other 'flyaway' rounds falling victim to travel restrictions. WEC and MotoGP rounds in Japan have already been cancelled, and the Olympic Games went ahead against a backdrop of widespread public protest. A decision on the Japanese GP would have to be made by mid-August because that is a hard deadline for team and infrastructure items – including tyres – being sent by sea freight.

The Russian and Brazilian GP promoters are understood to be determined to run their events. Holding Turkey and Russia back-to-back as currently planned poses few logistical constraints. While it is highly unlikely the Chinese GP will return to the calendar this year, one option is another race at the Circuit of The Americas on October 17, the weekend before the US GP. This would form a triple-header with Mexico (October 31), although that race is looking shaky owing to the coronavirus situation there.

Brazil presents a major logistical problem owing to the prevalence of the so-called Gamma Covid variant there, and F1 personnel returning to the UK and Europe from Brazil would have to observe a 14-day quarantine. Germany's *Auto Motor und Sport* magazine has reported F1 will deal with this by pushing the Brazilian GP back to November 14, moving straight on to the Middle East for an additional race the following weekend. This could be in Bahrain, although Qatar is reportedly keen to host an event. Equipment could then remain in the region for the Saudi Arabian and Abu Dhabi GPs.

For the second season running there will be no Australian GP, and other races are still at risk of being cancelled because of the pandemic



A DECISION ON THE JAPANESE GP WOULD HAVE TO BE MADE BY MID-AUGUST

F1 MASTERMIND

Your chosen specialised subject: the world's greatest motorsport

- Q1 How many times did Jim Clark qualify outside the top 10 in his 73 world championship F1 starts: 4, 7 or 13?
- Q2 Which race in 1983 did the McLarens, driven by Niki Lauda and John Watson, fail to qualify for?
- Q3 True or false: both of Nico Hülkenberg's two fastest laps in F1 were achieved in Singapore
- Q4 How old was Jack Brabham when he claimed his last world championship F1 win: 42, 43 or 44?
- Q5 Esteban Ocon has had four team-mates so far in F1: Sergio Pérez, Daniel Ricciardo, Fernando Alonso and which other driver?
- Q6 Which future world champion made his F1 debut at the 1973 Monaco GP?
- Q7 Which team has managed to get both cars to the finish of every race so far in 2021?
- Q8 Alain Prost's six French GP wins were achieved with how many different constructors?
- Q9 Who did Mark Webber collide with when he flipped his Red Bull during the 2010 European GP?
- Q10 Who are the only two drivers to have won four races during their F1 careers but not manage to claim a pole position?



PICTURES: MARK SUTTON; JERRY ANDRE; RAINER SCHLEGEL; MILCH MOTORSPORT IMAGES ARCHIVE



THE F1 ANALYST

BEN EDWARDS

@benedwardstv

PICTURES motorsport IMAGES

ALLISON ON A PAR WITH TECHNICAL GREATS OF F1

James Allison recently stepped back from his frontline role as technical director at Mercedes after 30 years of working with some of the greatest drivers and engineers Formula 1 has seen. Allison will continue as the team's Chief Technical Officer, but as he explained at a recent event organised by the British Motorsport Marshals Club, the job of 'truffle hunting' within the new regulations has been taken on by Mike Elliott.

James was candid and fascinating as he answered questions from volunteers who form the backbone of motorsport, taking us on a journey from his first involvement in motor racing to combining his efforts with drivers who would win a dozen titles with his input.

World champions were on his agenda from the very beginning. Nelson Piquet was driving for Benetton, one of only two teams that replied to an application letter that James sent out in 1991. An initially positive interview was disrupted by legendary technical director John Barnard, outraged the team was looking to employ extra

engineers without his permission. Thankfully, Allison converted Barnard in a second interview and was taken on.

James began as a junior in the aerodynamics department, and soon afterwards a new driver joined the team who would go on to have one of the biggest influences on Allison's career. Michael Schumacher made his F1 debut with Jordan at Spa but at the next race in Italy he was part of Flavio Briatore's Benetton team. By this time Barnard had fallen out with Flavio, and Ross Brawn had been brought in to work alongside Gordon Kimball and Rory Byrne.

Allison was connecting with significant technical people in F1 early on and those connections had big consequences. Despite leaving Benetton in the early '90s, James was back there in time for Schumacher's second world championship in 1995 and would re-join Michael, Ross and Rory at Ferrari for the Scuderia's golden period of five driver's titles in a row from 2000 to 2004.

Schumacher's approach, and the way he interacted with each team member, is something that resonates with James to this day: "He made us feel part of his championships in a way that was very rewarding. He was very generous with the enjoyment of his success; he would come and spend time with you. The smiling was genuine and the gratitude that he had for what we had done to provide the vehicle was brilliant to be a part of."

But not everything Schumacher did was perfect... "Michael was ruthless, sometimes

ruthless in a way that was uncomfortable for people like me, who really like and admire him; ruthless on the track in a way which you can't defend. But he was someone who seemed to treat the team as an extension of his family, just a brilliant guy and completely not what his cold Teutonic caricature was like in the British press at the time."

In 2005, after the success at Ferrari, Allison returned to the team that had evolved from Benetton into Renault to work with technical director Bob Bell. Having worked with so many elite engineers, James feels Bell had more influence on him than anyone else.

"Not many people talk about Bob because he doesn't shout about himself and he doesn't put himself about in the media. He's a very understated person, but anyone who has been lucky enough to work with him has seen the quality of his judgement, the steel in his character; one of the most decent and honourable people that you'll ever come across and someone who will put the team in front of his own interests every day of the week – including twice on Sundays. An absolutely golden person."

Renault took the next two drivers' titles with Fernando Alonso, but the team went through a difficult patch in the late 2000s, morphing into Lotus – with Bell promoted to team principal and Allison becoming a technical director for the first time. The financial situation was not great, and it was no surprise to see James move back to Ferrari in 2013.

Adding more titles to the list proved tricky, although Allison's 2015 Ferrari won on its second outing with new recruit Sebastian Vettel. A year later James moved back to the UK and was soon signed up by Mercedes. It was the connection required for another golden period, and a connection to the only driver in F1 history to have matched Schumacher's seven titles. So, what does James see in Lewis?

"He's incredibly reliable in turning opportunities into victories; he is not by accident the person with the most poles of all time. Lewis is one of the most spectacular overtakers, in the sense he is able to conjure out of nothingness an opportunity to overtake and does it so cleanly, he's not a bullying bumper-car type overtaker, he's just brilliant. And it all matters to him just as much as ever despite the fact he's the most garlanded racing driver of all time. It seems to matter to him seemingly more than life itself. It's a sign of his greatness the amount that he cares."

Greatness is always recognised in multiple title-winning racing drivers, but it should also be celebrated in the technical supremos who lead the way in producing consistently fast and reliable cars. James Allison is certainly up there with the very best.



Allison has been part of a number of successful F1 teams over the past 30 years



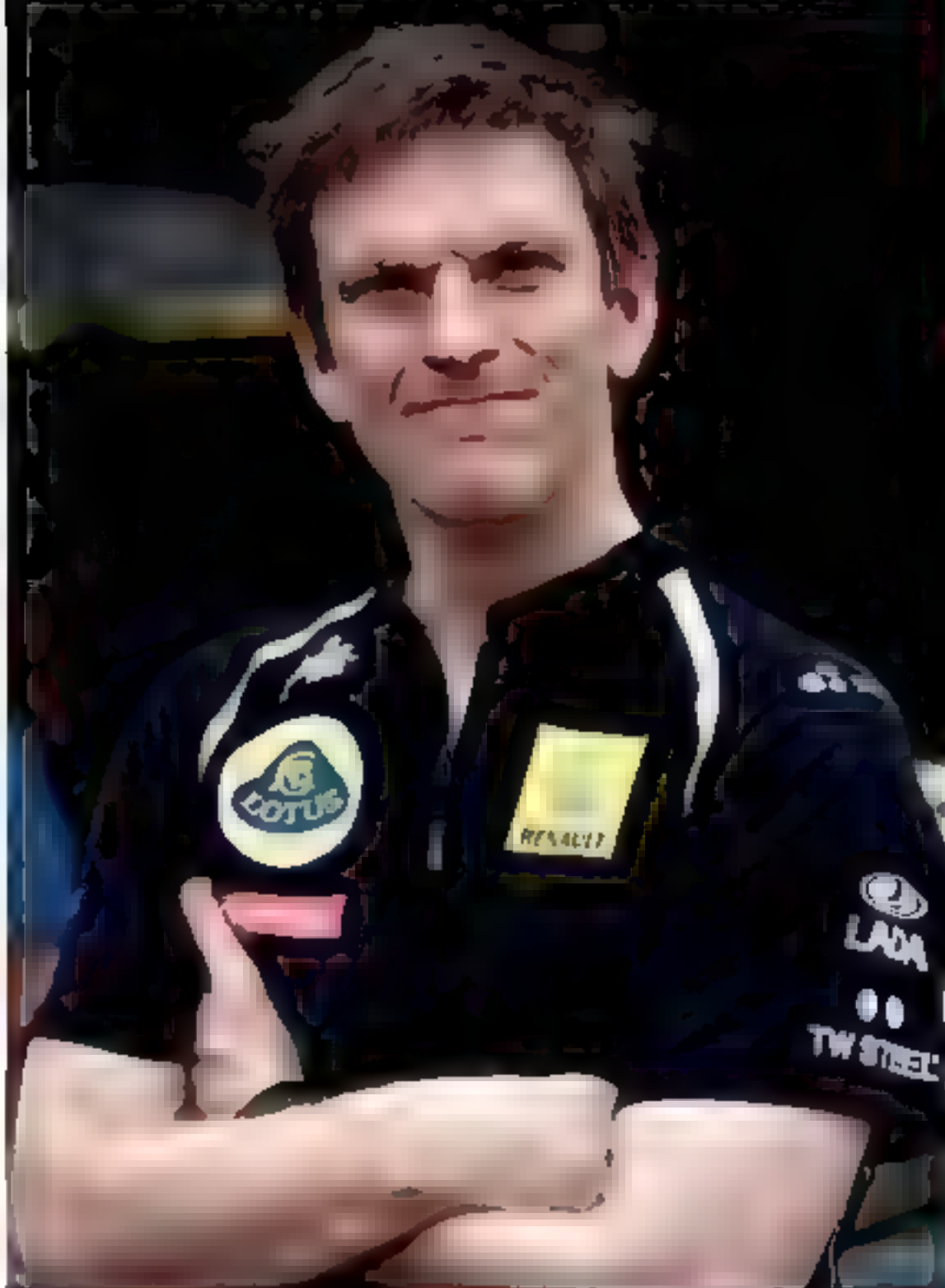
After a tricky period at Lotus, in 2013 Allison returned to Ferrari, the team he spent five successful years at in the early 2000s

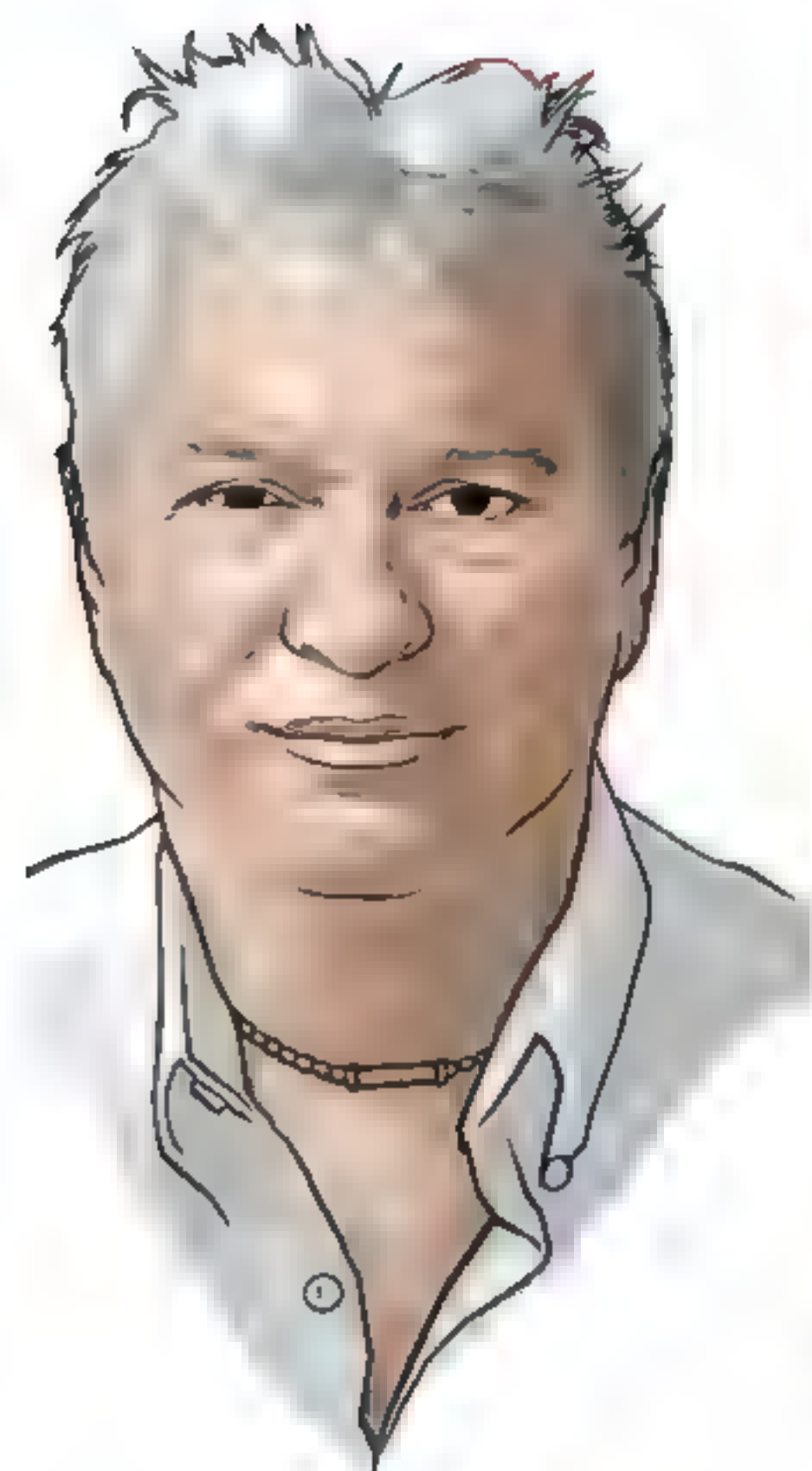
Although Allison's second stint at Ferrari was short, there were some wins to savour with Sebastian Vettel



Allison has been at Mercedes since 2017 (above) with even more success to enjoy

It was at Lotus that Allison became a technical director for the first time





UNDER THE HOOD

PAT SYMONDS

PICTURES **motorsport** IMAGES

tyre plays a very small part in the load capacity of the tyre.

Examining the construction in more detail, the rubber is reinforced in the sidewall, shoulder and belt areas with a number of different materials. These can be nylon, steel or – more usually in a racing tyre – an aramid fibre known as Kevlar. Kevlar is a very strong, lightweight fibre used extensively in crash structures, military and aerospace applications, and even bullet-proof vests.

The next thing we need to understand is how materials behave when they are subjected to load. I'm sure everyone knows that if you apply a load to a material it stretches as the load increases and then, when it reaches what is known as its ultimate tensile strength,

it breaks. What is less commonly known is that if you repeatedly stress something at a lower load it can also break. This is known as fatigue failure, and different materials behave in different ways.

With steel for example, providing you keep the load to a low level of around 50% of the ultimate tensile strength, it will survive any number of cycles. Aluminium is different in that if it is subjected to a cyclic load, it will eventually fail almost irrespective of the magnitude of that load. In both cases the behaviour is non-linear. In other words, while a high load will only be survived for a few cycles and a low load for many cycles, you can't simply say that a load half way between will lead to a failure in half the time – it will in fact be much less.

Kevlar is generally used in applications where its strength is the more important property. In a tyre the fatigue properties can be just as important. The material, when subjected to cyclic load, behaves slightly differently to either steel or aluminium in that, like aluminium, it has a finite fatigue life but the life is also a function of exactly how the fibre interacts with its neighbours in a multi-stranded rope or tow.

Most important of all the aspects of tyre durability is the loading condition. Every time a tyre rotates the construction is exercised as it enters and leaves contact with the ground in a process known as de-radialisation. The tyre flattens in the contact patch area, leading to complex loading in the sidewalls and shoulder of the tyre. The tyre designer, knowing the vertical load on ▶

THE TRUTH ABOUT BAKU AND PIRELLI

The high-speed accidents experienced by Max Verstappen and Lance Stroll in Baku raised once again the subject of tyre durability. The somewhat obscure nature of the press release issued by Pirelli after its analysis of the failed tyres led to some rather ill-informed comments in various publications, so it's worthwhile trying to understand both the nature of the failures and why the case was effectively closed as 'unproven'.

To fully comprehend the problem, we need to understand a few different facts about tyres and basic mechanical engineering. First and foremost is to know how a tyre is constructed and how it carries load. Of course, a tyre contains a lot of rubber and other polymers but the real load-carrying capacity of a tyre is governed by the materials used to reinforce the rubber.

These materials and how they are arranged are known as the 'construction' of the tyre. The particular mix of the rubber is known as the 'compound'. Here we can lay one of the first myths to bed. When, in a racing tyre, we refer to the



The damage to Verstappen's tyre that caused his accident in Baku led to a detailed investigation by Pirelli

compound we are actually referring to the tread compound. This is varied from circuit to circuit and between the hard, medium and soft compounds that we have all become familiar with. In current Pirelli speak, they are termed C1 to C5 – with C5 being the softest compound.

What is generally not appreciated is that these various tread compounds are wrapped onto the tread portion of a tyre, the main part of which is built from the same compound of rubber irrespective of what is used for the tread. The notion, therefore, (and often written) that a soft compound is more prone to failure than a hard compound is incorrect. The tread compound of the



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Figures shown are for comparability purposes: only compare fuel consumption and CO₂ figures with other cars tested to the same technical procedures. These figures may not reflect real life driving results, which will depend upon a number of factors including the accessories fitted, variations in weather, driving style and vehicle load.

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the tyre and the speed the car will experience, designs his tyre to cope with this at a given inflation pressure.

If the tyre operates outside the expected parameters, for example at a lower pressure, a phenomenon known as standing waves can occur. These are resonant deformations of the sidewall causing extreme loads in the tyre carcass. The knowledge of these is nothing new: an article in *Motor Sport* magazine in September 1958 mentions the difficulty of avoiding this destructive condition.

What is essential to understand about standing waves is that for a given construction there is a critical speed at which they occur. Below that speed the tyre behaves normally and above that speed huge deformations are seen in the sidewall and shoulder which appear stationary but are in fact moving rapidly. The critical speed is a function of load, camber angle and, most importantly, inflation pressure.

An increased inflation pressure effectively

increases the stiffness of the belt, which is the dominant parameter in avoiding standing waves. While the exact values for a Pirelli F1 tyre are not known, typically a 1 psi increase in pressure will raise the critical speed by around 3 to 5km/h on a wide racing tyre. Significant also is the tread depth, as a worn tyre has a lower critical speed due to the lower geometric section properties of the tread decreasing the effective belt stiffness.

“UNDERSTANDING HOW CRITICAL TYRE PRESSURES ARE LEADS ONE TO ASK WHY THE RUNNING PRESSURES ARE NOT MANDATED, RATHER THAN THE STARTING PRESSURE”

Understanding how critical tyre pressures are leads one to ask why the running pressures are not mandated, rather than the starting pressure. With the advent of 18” wheels next year, calibrated tyre pressure monitoring becomes mandatory which should put paid to problems of relating cold and running tyre pressures, something which should be easy but, due to imperfections such as moisture in the tyre, can actually be extremely difficult.

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STRAIGHT TALK

MARK GALLAGHER

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'BIG OIL' IS THE NEW TOBACCO FOR ADDICT F1

Just as Ferrari was celebrating Charles Leclerc's unexpected pole positions in Monaco and Baku, one of the Scuderia's important, long-term sponsors was dealing with a surprise of rather more significant proportions. A court ruling which sent out shockwaves.

While we are used to court cases involving the tobacco industry, this time it was not Maranello's friends at Philip Morris who were in the dock. Instead, it was Shell which found itself at the wrong end of a ruling.

Big Oil has replaced Big Tobacco. The charge is that they've smoked the planet.

Somewhat appropriately, things have heated up due to the cumulative effect of public opinion, successful lobbying by environmental campaigners and governments keen to fulfil their obligations under the 2016 Paris Agreement.

The global pandemic has also led many to rethink how small our world has become, and the need to treat it better.

On 26 May the District Court in The Hague

gave its verdict in a case filed against Shell, by Friends of the Earth Netherlands, six Non-Governmental Organisations and around 17,000 members of the public.

The claimants put the case that climate change is a human rights issue, arguing that the giant Anglo-Dutch company had a duty of care to prevent harm coming to inhabitants of the Netherlands and the islands of the Wadden sea, a UNESCO World Heritage Site.

The court agreed, ordering the Shell Group to reduce its net CO2 emissions by 45% by 2030, compared with its 2019 emissions. Since the company is headquartered in the Netherlands, although it is a UK public limited company, the court's order applies to Shell's worldwide operations.

This is highly significant, even if the court's decision applies only to Shell's own operations, and not to the emissions produced by its suppliers or customers. As a result, 90% of the total global emissions attributed to Shell fall outside the judgement. Thanks to tobacco, we have been here before. These kinds of court cases are only going to increase in volume and consequence.

Given the importance of the energy sector to Formula 1, with around £250m in sponsorship coming from Aramco, Shell, Petronas, Exxon-Mobil, BP Castrol, Orlen and Gulf, this could be a worry.

Except that F1's ambitious target of achieving net-zero carbon emissions by 2030 gives it a strong hand, while the promise of using environmentally sustainable synthetic fuels by 2025 is the ace up its sleeve.

The majority of oil majors have fallen into line with the international target of limiting global warming to 1.5C, requiring net zero emissions to be reached by 2050. However, the pressure is on to advance that deadline.

BP's CEO Bernard Looney recognised this when, in February last year, he outlined his ambitious plans to de-carbonise the company and 'reimagine' energy sooner than later. This has included a significant move into renewables and working with automotive groups including Volkswagen, Daimler and BMW to provide rapid-charged solutions to the electric vehicle market.

Synthetic fuels are a significant weapon in the de-carbonisation battle, evidenced by Porsche's decision to invest in the Haru Oni project in Chile. This aims to produce 550m litres of synthetic fuel per year by 2026.

It's clear 'oil companies' reinvented as 'energy providers' are looking for ways to evidence the speed of change within their sector. It might just be that F1 can offer them the means to achieve that in a world eager to kick its addiction to black gold.



Charles Leclerc celebrates his pole position in Baku. Shell's logo is prominent on his overalls, and the oil company has been a technical partner of the Scuderia for many years





F1'S HIDDEN BATTLEGROUND

Fuel and lubricants have become a key part of F1's development war again, as manufacturers chase performance outside the boundaries of the budget cap

WORDS JONATHAN NOBLE PICTURES  **motorsport**
AND STUART COOLING **IMAGES**

That Red Bull is on a roll at the moment is obvious – we can measure its advantage not just in terms of lap times and race results, but also in the quantity of innuendo directed at it by rivals.

Mercedes might have landed a couple of blows by lobbying for new wing-flexibility tests and pitstop timing rules, but the fact remains that Red Bull's RB16B can still outpace Merc's W12 on pretty much any circuit – by a quarter of a second or more per lap.

Part of that margin comes from the engine bay but isn't a factor of horsepower alone.

In Azerbaijan ExxonMobil, Red Bull's fuel and lubricants partner, introduced what it described as a "revolutionary" new oil which incorporates components not traditionally used in lubricants. For the French Grand Prix Honda brought a greatly revised specification of the all-new power unit it introduced at the start of the season. These developments are not unrelated.

Trick fuel 'n' lubes are nothing new in F1. Until pump fuel became mandatory, additives to boost power and/or improve resistance to pre-ignition (or 'knock') were in common use. Advanced lubricants then went hand-in-hand with exotic metallurgy in the 1990s as engine manufacturers chased ever higher revs.

But as data analytics improved and the FIA clamped down on development in the 2000s, other opportunities emerged: if, for instance, a lubricant could massively reduce friction while maintaining reliability, the engine would require less cooling and therefore the sidepod apertures could be narrowed, reducing aerodynamic drag.

In the era of homologated engines from 2007 onwards, fuel and lubricants became a development focus since mechanical changes could only be justified on reliability grounds (although this didn't stop cunning manufacturers sneaking performance upgrades through).

So while Honda insists its new PU spec isn't more powerful than the one rolled out at the start of the season, perfectly legal changes made in the name of reliability are believed to be enabling Red Bull to run it in more aggressive modes than before. The exclusive arrangement with ExxonMobil complements and facilitates this.

One of Red Bull's bugbears during the latter seasons of its relationship with Renault was that it was unable to secure dyno time with its lubricants supplier because Renault was focusing on optimising its engines to work with its own fuel and lubes partner, Castrol. Since both ►

Red Bull-backed teams have been working solely with Honda – Toro Rosso/AlphaTauri since 2018, Red Bull Racing since 2019 – innovations have been able to flow in this area.

Straightline speed, previously not a Red Bull strong suit, has demonstrably improved – and the difference was especially noticeable at Paul Ricard, when the latest Honda engine came on stream. Red Bull naturally dismissed suggestions



Improvements in fuel and lubricants in F1 is one way teams can increase performance and enhance engine reliability, plus reduced cooling need offers aerodynamic benefit

from the Mercedes camp that the new engine begat this increased speed, putting it down to improved energy management and running slimmer-profile wings than Mercedes.

But the ability to run the engine more aggressively than before is undoubtedly a contributor to Red Bull's current pre-eminence. ExxonMobil won't reveal specifics about the chemicals used in its new-generation Mobil 1 lubricant, but will admit it has looked to elements normally found in products from the cosmetics industry. The key to the success of any high-performance lubricant is to deposit a protective film on the internal surfaces to reduce wear and friction – while at the same time being low-viscosity to avoid drag on moving components.

ExxonMobil Global Motorsport Technology Manager Tomek Young told *GP Racing's* sister website *Motorsport.com*: "The cosmetics industry offers many unique naturally derived components and we had to evaluate a range of



similar products before selecting the best.

"These new components were incorporated as they were found to offer many benefits, including stronger interactions with metal surfaces and lower friction, helping deliver maximum power while offering protection and fuel efficiency.

"These benefits translate into an ability to run the engine across a wider range of conditions."

Young says the initial idea to use such chemicals came up around eight years ago, and they have been tested in ExxonMobil's laboratories since then. But it's only relatively recently, during Red Bull's partnership with Honda, that it's been able to evaluate it while running on the dyno.

Young adds: "Some elements of the chemical



Red Bull has definitely seen an upturn in the performance of its Honda engines this season

composition of our new engine oil are a departure from what we would normally formulate a product with. What was a long shot a few years ago – a vision of a low-ash, high-temperature, low-friction engine oil that incorporates bio-based components became a reality this year, thanks to the efforts of our whole team, in collaboration with Honda and Red Bull. We believe this will offer us opportunities into the future."

"If it's improved the engine reliability a little bit," says Red Bull chief engineer Paul Monaghan, "then it makes it easier for us to observe the three power units per year regulation. And it also gives us the ability to run it more free with the miles in its most performant mode.

"We can also learn more about the car through



IT'S VANISHINGLY RARE FOR A SINGLE COMPONENT TO YIELD A LAP-TIME IMPROVEMENT IN THE ORDER OF WHAT RED BULL HAS ACHIEVED

a race weekend rather than having potentially a restriction. In terms of outright performance, if it ups the efficiency of the engine a little bit because we have less pumping losses through it, we bring the friction down a little bit, then those are all small steps that simply contribute to an overall gain in the car's performance."


It's vanishingly rare for a single component to yield a laptime improvement in the order of what Red Bull has achieved this season, but what it can do is open possibilities which lead to a virtuous

cycle. In this case, fuel and lubes working in tandem with power unit supplier and chassis designers to find aerodynamic gains as well as power and reliability.

"We're still working with Red Bull and Honda to accumulate more performance data," says Young when asked if it's possible to quantify the new oil formulation's contribution to Red Bull's laptime gains. "The team is constantly refining every aspect that can result in a benefit, so there are always multiple changes in play.

"In the end it may be difficult to separate out at-the-track oil contribution with the contributions from fuel, engine operation parameters, and vehicle aerodynamics. But we had tested multiple formulations with Red Bull and Honda in a laboratory, before selecting the one we race with."

What should cause Mercedes to worry is the likelihood of Honda finding further ways to exploit the new formulation before it bows out of Formula 1 at the end of the season and hands the engine over to Red Bull.

"We made this oil so unusual that the engine can run even harder down the road," says Young. "So further optimisations to the aerodynamics and to the operating conditions will be possible." 

THE LONG INTERVIEW

As a young boy, Carlos Sainz was schooled by his father in the special folklore surrounding Ferrari in Formula 1. Now an established grand prix ace – and a Ferrari driver to boot – Sainz opens up to *GP Racing* about driving for the team of his childhood hero, and of his own boyhood dreams...

WORDS BEN ANDERSON
PICTURES  AND FERRARI

THIS IS
CARLOS

SAINZ





The 2005 Spanish Grand Prix is remembered chiefly for a crushing Kimi Räikkönen and McLaren victory over home hero Fernando Alonso. Supporting Alonso in the Renault pit that weekend was World Rally Champion Carlos Sainz Sr – a huge F1 fan in his own right – alongside his 10-year-old son.

The connections between modern Spanish motorsport's most famous names are well known, but there was another,

less well-known trip the Sainzes made that weekend which ultimately proved far more significant.

Being taken to the Ferrari garage by his father left a lasting impression on the younger Sainz, who was beginning to forge his own racing career in karting, and it became his dream to one day race in the scarlet red of the Scuderia in Formula 1.

Sixteen years later, those boyhood dreams have become reality and Sainz is now racing for the most famous grand prix team of them all...

GP Racing: You've made this massive, racing drivers' dream move to Ferrari – it's a huge thing. I'd like to start with the emotional aspect of going to Ferrari, because for every racing driver, at any level, Ferrari is a huge name. And obviously for you personally, growing up as a young Formula 1 fan, a big Fernando Alonso fan, and the big connection there between

Carlos Sainz Sr and a 10-year-old Sainz Jr greet Ferrari test driver Marc Gené at the 2005 Spanish GP. The Sainzes were there to support home hero Fernando Alonso

him and Ferrari. So, what did Ferrari mean to you growing up, and now you've become part of the Ferrari story yourself how has that move changed your life?

Carlos Sainz: It goes back a long time you know. First of all, when we are all kids, when we are all in go-karting, growing up in junior formulas, we all see Ferrari as a place we want to be at some point in our careers. And for me that goes back to the fact that I went to Barcelona, to the Spanish GP when I was 10 years old, in 2005. I had the chance to meet Fernando Alonso there. I also had the chance to go to the Ferrari garage, and I met Jean Todt, I met Michael Schumacher. And immediately, I just could just feel the aura, the special feeling in that box, and my father was trying to explain to me how important this was and how big Ferrari was, and how special it was.

GPR: And how does it feel now you're there for yourself?

CS: I guess you mature, you grow up, and you realise what your father has told you. And as you get older, and you follow Formula 1, and you learn about the history of it, then you're part of it, and you start to understand why this team is such an iconic brand and iconic car manufacturer. And when you start to be in the paddock and you start to see Ferrari a lot more, you get used to seeing all these people wearing red in the paddock, and it starts being a lot more normal to you. But once I got to feel like I had the chance of going to Ferrari, then everything just stopped and I said, 'OK, it might be happening, it might be my time, and it might be a dream come true'.

GPR: Is it a dream come true then? Did you always have that feeling that one day you wanted to race for Ferrari?

CS: It's always been in the back of my mind. And since I was in Toro Rosso [as a rookie in 2015], every time I encountered a team member from Ferrari, I just had a good connection or a special conversation feeling with them. I was speaking Italian already in Toro Rosso. A lot of the mechanics from Toro Rosso went to Ferrari. So, I don't know why but I just had this good vibe going on already since my first years in Formula 1, and I always wanted to picture myself as a Ferrari driver one day. What I didn't expect is for it to happen so early in my career, in the manner it happened.

GPR: And once you arrived and you became a Ferrari driver for real, how did things change for you, and how did the whole team live up to your expectations – what did you find once you arrived in Maranello?

CS: Well, I found a team that obviously was coming from a very difficult year in 2020, hurt a bit by the year that was, but a team full of determination to fight back, and I liked it straightaway. As soon as I landed in Maranello in December I got a chance to do my first meetings there... obviously a bit surprised at first with [the scale of] their resources, with the amount of people,

with the amount of departments, amount of buildings here.

Maranello actually, the headquarters is inside a village – and then there's the village that surrounds the headquarters and it's super impressive the first time you come here. You see then there's a circuit inside the village – Fiorano. So, it's like everything is built around Ferrari here, and it's super special, and then you start understanding a bit how big Ferrari is.

GPR: Putting this move into the context of your career, you've had quite a tough road to get here in terms of not being able to get the Red Bull seat you initially wanted, then the politics of the Renault situation, going to McLaren – it's been a battle for you, so what have you learned about F1 and also yourself, given the very particular journey you've been on to get here?

CS: I agree, it's been a particular journey with a lot of moments on the limit – that I was on the line of my career going one way or the other. You go through moments of very high pressure,

Sainz is used to changing teams. Ferrari is his fourth outfit in seven seasons in F1

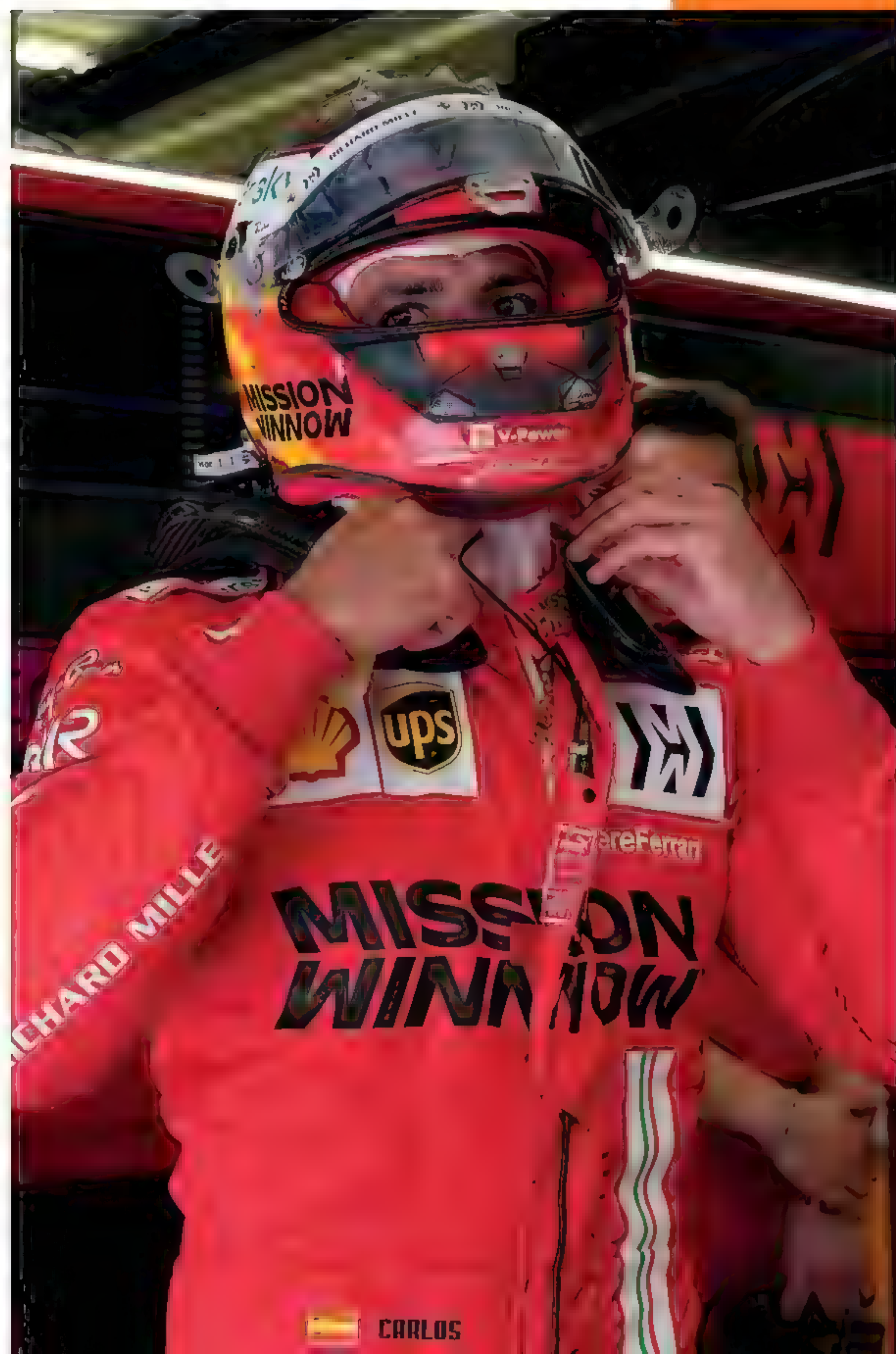
I ALWAYS WANTED TO PICTURE MYSELF AS A FERRARI DRIVER ONE DAY. WHAT I DIDN'T EXPECT IS FOR IT TO HAPPEN SO EARLY IN MY CAREER

which are very difficult to handle mentally. But I've always believed in my talent. I think this is the number one thing – you need to believe you are as good as anyone else in the sport. But then second, also in my way of doing things and the hard work that comes with it. It was tough – particularly 2014 in [Renault] World Series where I didn't know if I would make it to Formula 1, then the year in Renault that was also quite demanding. In the end, it all turned out to be good. So, it has proven to me that if you keep your head down, if you keep working, if you keep following your feelings in terms of the way you go at things, it all turns out to be good. I'm going to keep pursuing this.

GPR: You've driven for four different teams in only seven seasons. That's a lot of different people, ways of working, technical aspects, philosophies. How have you approached that, and how have you evolved yourself to make the most of those opportunities?

CS: This adaptation process is a topic that has come up probably more in the media this year than any other year, because four or five high-level drivers have changed teams, or have arrived back into Formula 1. It went a bit viral in the media that it was going to take us a bit of time. I was a bit surprised, because I've done this change three times in seven years and I remember when I moved to Renault, no one was talking about my adaptation process. Everyone was expecting me to deliver... when I went to McLaren, no one talked about whether it would take me a few races [to adapt].

This year it's been the main topic, and I've dealt with it, I think nicely. I have the opportunity to learn from my past changes of teams, and I think this has allowed me to hit the ground running nicely with Ferrari. It's a matter of having the capacity as a driver to adapt, but also knowing how to integrate yourself into a team, having the right questions to ask depending on the department that you're chasing for ►





performance and comfort inside the car. And this is a natural process that, if you have a good bonding with a team, it should happen. And for me it has been a smooth transition so far.

GPR: Do you feel properly comfortable in your new environment? Lewis Hamilton when he went to Mercedes, it took him the whole first season really to get fully comfortable...

CS: I fully agree with you that it might take up to a year to deliver at the highest level. When you see drivers like Max [Verstappen], when you see drivers like Lewis, when you saw Checo [Pérez] at Racing Point, when you see Charles [Leclerc] in Ferrari, these are drivers who have been more than three, four years inside the team. And I'm a strong believer that on the third, fourth year of that team, they are better drivers than in the first year. It's a process. It doesn't mean you cannot do very well in your first year. Actually, you must do very well in your first year. But the level of delivering at 100% in every single race, I think this comes a bit later. You have the best examples with drivers that have been spending more than two, three years with the same team.

Sainz claimed his first podium as a Ferrari driver around the streets of Monte Carlo

GPR: You see it with Lando Norris at McLaren now, don't you?

CS: Third year with McLaren. And suddenly the level of consistency you reach with a team – the level of understanding with strategy, with data management, the radio communications during the race, it's at a different level once you've been there more than a year.

GPR: The calibre of drivers you've been up against, including Charles now at Ferrari, having that level of team-mate as a reference, do you enjoy the intensity of having that pressure on the other side of the garage?

CS: Absolutely. For me, it's going to be, and is already, a great challenge to be up against a guy like Charles. But the fact I've been up against guys like Max Verstappen, Lando Norris, Nico Hülkenberg – you know the level of drivers they are – makes me also not fear the challenge, embrace the challenge, and go up against another top guy like Charles. I will give it my best go.

The relationship is super good. I'm enjoying it a lot because we have this great competition between each other, a bit of



THE LONG INTERVIEW



CARLOS SAINZ

example recently of a guy who kind of can adapt to almost anything that's thrown at him by engineers or a team. And then you've got guys like Kimi Räikkönen, Sebastian Vettel, who work to get the car built around their style, which is a longer process. So how do you approach this work of adapting?

CS: I'm not sure where I sit on that spectrum. But let's say my philosophy is whatever the car is capable of, whatever my team-mate – in this case Charles – is doing with that car at the moment is really, really good, so I need to find a way to drive it like he's driving it to get to that level. Once I'm at that level, I'm going to steer the car balance and direction towards the things I prefer. First I need to prove that I'm quick and that I can drive a car with this [fundamental] balance – and that is where you rely on your adaptation process and the talent to just feel the



banter. After every qualy, after every race, we shake hands, but we're pushing, we're flat out. We're a bit crazy sometimes with some high-speed corners and the way we do them, and it's great. I'm enjoying the battle and the camaraderie with him.

GPR: How have you felt in terms of driving style? Because there's a big scale. I think Fernando's probably the best

car and change your driving style. F1 nowadays is so complex. Every car is a completely different story, a completely different driving style. They are demanding for the drivers to adapt to – but it's also fun trying to challenge yourself.

GPR: When it comes to specifically driving the new car, do you go in with a completely open mind, or are you looking to replicate feelings you've had in the past?

CS: There are the basics – getting comfortable in the seat, getting your brake pedal to your feeling, the torque map and the throttle. But then you go out of the box, in Fiorano or Bahrain, and the first laps you do in the car, I was driving the car exactly the same as I had been driving the McLaren for the last two years. And I immediately got to a very competitive lap time. And I was like, 'OK, job done'. It's like, 'I'm nearly there, only a tenth or two away from where I want to be'.

Then you realise that to extract those last two tenths, once they give you five sets of new tyres in qualifying, and know to extract a tenth out of every new tyre, and how the car reacts to the wind, how the car reacts to the front wing changes that ▶


EVERY CAR IS A COMPLETELY DIFFERENT STORY, A COMPLETELY DIFFERENT DRIVING STYLE. THEY ARE DEMANDING FOR THE DRIVERS TO ADAPT TO

THE
LONG
INTERVIEW



CARLOS SAINZ





Sainz relishes the extreme challenge of trying to adapt his driving to match the quality of team-mate Leclerc



you do through qualy, what you do with the switches, the diff, the engine braking, what you do with the brake balance for each corner – those are the last two tenths, the difference between being in Q3, P5, or being Q2, P11 and a disappointing qualifying, two tenths off where the car should be.

And those two tenths are the complex ones to find. You don't know where they are. And you have to challenge yourself as a driver, and challenge your engineers around you, to try and help you – what do you think suits this car? What is the driving style? What is your team-mate doing to extract that last couple of tenths?

And there you go back to the factory, you dig into the data, you put the hours, you challenge yourself in the simulator to try and change your driving style and drive in a completely different way to what you're used to. And suddenly it starts happening a bit more unconsciously, because you practice and you practice and you try and you try – and that's why I say it's also good fun, because there's a very long process behind it.

YOU DIG INTO THE DATA, YOU PUT IN THE HOURS, YOU CHALLENGE YOURSELF IN THE SIMULATOR TO TRY AND CHANGE YOUR DRIVING STYLE

GPR: I think that speaks to your character, doesn't it? Because you're a hard-working guy, someone who clearly really enjoys the technical aspects of Formula 1, which not every driver does.

How have you found Ferrari's way of working, because on top of this normal process you've got the biggest team in F1, with this metropolis at Maranello, and this scale of people, a different culture, a different way of going racing, different resources. How do you gather all that together to work for you?

CS: Well, it's a difficult process, because you need to know which departments and which people to click with to try and help you in these different areas. The modern F1 driver nowadays works hard, as a default. I can tell you, from all my team-mates I've had in F1 – Verstappen, Nico (Hülkenberg), ►

THE LONG INTERVIEW



CARLOS SAINZ



Sainz is encouraged by what Mattia Binotto (right) is trying to achieve to give him and team-mate Leclerc (left) what they need to be back at the front of the grid



Charles, [Daniil] Kvyat, Lando – I see these guys working very hard, putting a lot of hours in. In the end, it's up to the fine detail, and also seeing who is more adaptable. But as I said, if you click and you know where to go to chase the things you want to chase – it's still human beings, they still react, they still come to you, you still work hard with them. And there's actually a very good team spirit [here] that I'm enjoying a lot.

GPR: Ferrari has had difficult periods, and obviously has been political, but I get the feeling the Ferrari of now is not so much like the Ferrari of yesteryear – there was always this sense of a blame game going on. The team seems very pragmatic now, coming from the top when you hear Mattia Binotto talk – he's very honest about the limitations and how the team will progress back. That must be quite encouraging, to come to a team that seems to be very unified, and very focused on its goal.

CS: I'm glad you're seeing it from the outside. Because inside the team, there is a massive push and a massive effort to evolve in this direction. You can see all the effort that Mattia and Laurent Mekies are putting on this team to try and steer it in that direction, and I'm glad that you guys are picking it up.

IT'S NOT EASY TO CHANGE – SUCH A BIG BOAT LIKE THIS, TO STEER IT IN ONE DIRECTION OR ANOTHER. IT TAKES A LOT OF TIME, AND EFFORT



I'm finding a very strong team spirit right now. And I'm coming from a team that was also on the way up, like McLaren, with a very good team culture, like McLaren.

So far what I'm seeing is Ferrari doesn't have a lot to envy from McLaren. It's not easy to change – such a big boat like this, to steer it in one direction or another. It takes a lot of time, and effort. I'm glad you see it, because I'm seeing it too. And I'm enjoying the process of also seeing this little cultural change that is going on and the way it's being approached.

GPR: How is that manifesting in terms of your progress this season? Ferrari's obviously got some very specific problems to address to get back to the front. That must mean a lot of work is thrown at you guys. Car development is different because of the 2022 regs, but there's a lot of effort that still needs to go ▶



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I REALLY LIKED THE WAY
THE TEAM KEPT IT COOL,
DIDN'T OVERREACT, STUCK
TO OUR PROCESSES,
A LOT MORE PRAGMATIC

in to make sure that processes are right and previous mistakes have been learned from, so how are you finding that process?

CS: It's a fun process. It's not easy, because obviously there's the pressure of being in Ferrari, there's a lot of pressure coming from the outside, so it's difficult sometimes to react to things [in the right way]. But I think a very good example is Austria – the fact we decided to try to go through [Q2] with a medium [compound tyre] and not overreact to try and go into Q3 with a soft, like maybe other teams did, because we believed not going

into Q3 with a soft was the right call.

Maybe in the past, with the outside pressure, you need to put at least one Ferrari in Q3, and split the strategies. But no, this time we stuck to our plan, and recovered in the race. It's not where we want to be – we want to be in Q3 with a medium, first of all, we acknowledge that – but for the car we had that weekend, we realised our plan. I really liked the way the team kept it cool, didn't overreact, stuck to our processes, a lot more pragmatic, as you said, and we made it happen. This is a sign of a team trusting their processes and going in the right direction. 🏆

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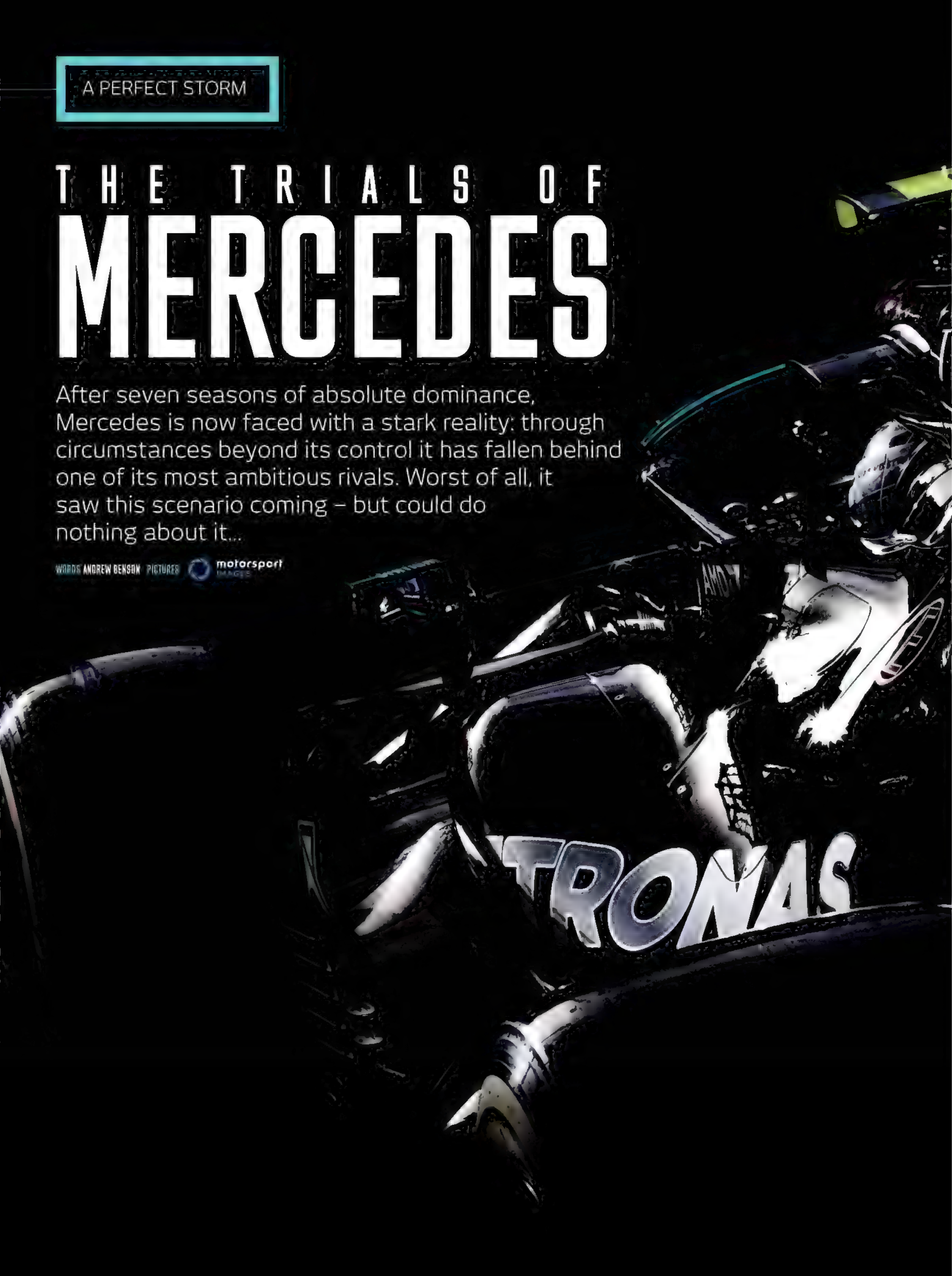


A PERFECT STORM

THE TRIALS OF MERCEDES

After seven seasons of absolute dominance, Mercedes is now faced with a stark reality: through circumstances beyond its control it has fallen behind one of its most ambitious rivals. Worst of all, it saw this scenario coming – but could do nothing about it...

WORDS ANDREW BENSON PICTURES  motorsport
IMAGES





A PERFECT STORM

Mercedes had an inkling as long ago as last winter that this year's world championship might be tougher than any it had experienced since its domination of Formula 1 began in 2014.

As the engineers at the world champion team's base in Brackley worked hard on developing the W12 car, the final one of an era before the introduction of swingeing rule changes for 2022, the numbers coming out of the computers did not make for happy reading. Not only had rule changes over the winter badly affected their car, but the gains they were finding as they looked for more performance were not as big as they were used to.

There was concern, but at that point Mercedes had no idea whether its rivals were suffering the same problems. Then, at the pre-season test in Bahrain, it realised it had fallen back a lot more than other teams. To the point that Red Bull – which, despite a convincing win in the final race of 2020 in Abu Dhabi, had been well over half a second a lap slower than Mercedes over the course of 2020 on average qualifying pace – now clearly had a quicker car.

When the 2021 season started, three wins for Lewis Hamilton from the first four races, all closely fought, all suggesting that the Mercedes and Red Bull were evenly matched, gave Mercedes hope. But then reality bit hard.

Monaco and Azerbaijan were, in Hamilton's words, "a disaster". Hamilton should have won in France, but Mercedes made a critical tactical error in the race, and then Max Verstappen dominated the two races in Austria for Red Bull, taking his championship lead out to more than a clear win.

The size of Red Bull's advantage in Austria led to some admissions from Mercedes – development on the 2021 car had stopped, team principal Toto Wolff said, and all research and development effort was already on 2022.

Mercedes could still improve the car, Wolff insisted, but the championship, he said, was "against the odds for us now".

How did a team which has dominated seven years of Formula 1 get into this situation?

THE ORIGINS

The story starts back in the spring of last year. Formula 1 was in a hiatus forced on it by the coronavirus pandemic. The Australian Grand Prix had been cancelled, it was not clear when or even whether the 2020 season could start, and the sport's bosses, in conjunction with the teams, were working frantically on ways to keep F1 alive.

A series of plans were hatched. To save money, the new rules planned for 2021 would be delayed by a year and teams would carry over their 2020 cars for a second season, with development heavily restricted other than on aerodynamics.

But this caused problems for F1's tyre supplier, Pirelli. 2020 was meant to be the last season for its existing tyres before lower-profile 18-inch tyres of a completely new design were introduced in 2021. Delaying the new rules meant another season for the existing tyres, which Pirelli knew

were already on the edge when it came to structural integrity.

Pirelli was concerned about the ramifications of continuing to use tyres that were already on the limit on cars that would have another year's worth of aerodynamic development on them. It asked the teams and the FIA to come up with technical changes to slow down the cars for 2021, to take the strain off the tyres.

The first idea was to reduce the size of rear wings, but when that did not produce the necessary reductions, attention turned to the floor – a key area for developing downforce.



It was decided that a triangular area of the rear floor edge – what has subsequently become known as 'the cheese slice' – would be removed.

But when racing finally began in July last year, fresh problems emerged. Hamilton won the British Grand Prix on three wheels after his left front tyre failed on the final lap. Team-mate Valtteri Bottas and McLaren's Carlos Sainz suffered identical failures at very similar times.

In August, the FIA told the teams that Pirelli would be supplying the same specification of tyre in 2021, so further aerodynamic changes were needed. These involved removing a series of aerodynamic shaping devices – known as strakes, louvres and winglets – on the floor and rear brake ducts.

Racing Point objected, saying that the combination of these changes would disproportionately affect the teams running cars with low rake – the angle in relation to the track from front to back – compared with everyone else, who run high-rake designs. The only teams running low rake were Racing Point and Mercedes. The complaints were disregarded and the changes forced through on safety grounds.

Then, it emerged that Pirelli could, after all, supply new, ►

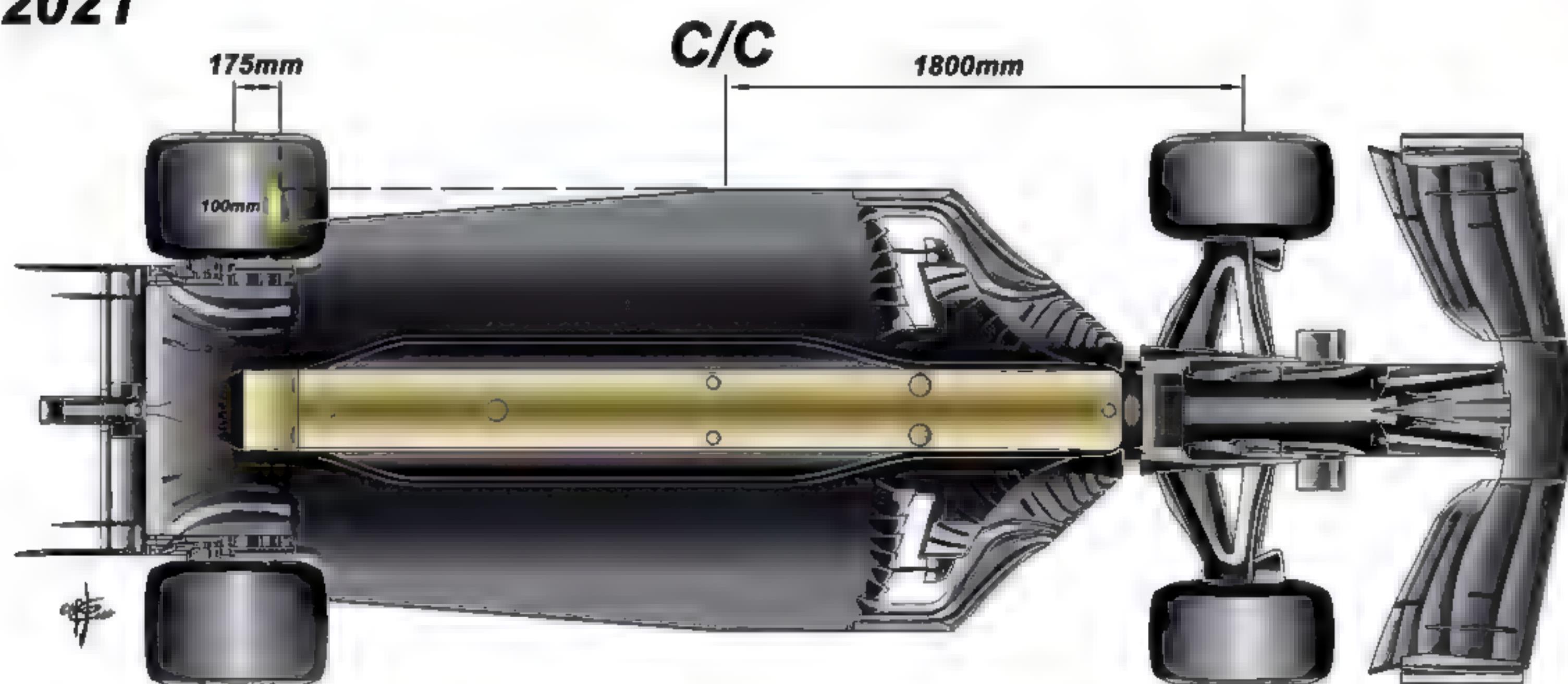
SILVERSTONE 2020

After the failures at the British GP last year (right), aerodynamic changes for 2021 were put in place to protect the Pirelli tyres. In the end the 2021 rubber (above) was beefed up anyway



A PERFECT STORM

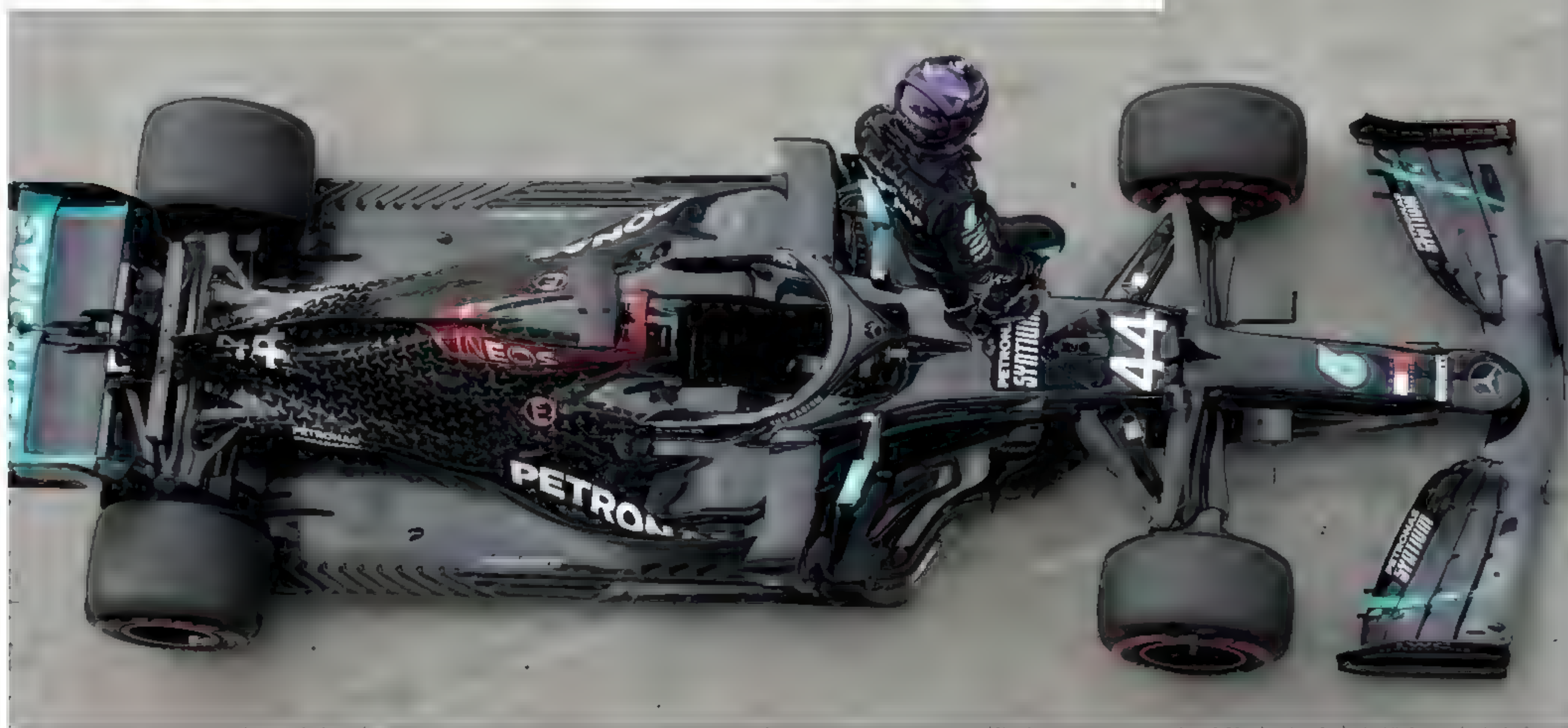
2021



The two low-rake teams, Mercedes and Aston Martin, seem to have been more adversely affected by the 2021 aerodynamic rule changes

FLOOR CHANGE

The prescribed removal of the many fins on the floor of the 2020 Mercedes (below) in conjunction with the diagonal cut to the floor area (left) has caused problems



stronger tyres for 2021. These were tested at the Bahrain Grand Prix and, although they proved slower and heavier and offered worse handling than the 2020 tyres, a decision was made to use them this season.

Fast forward a couple of months to the pre-season tests in Bahrain. The Red Bull looked stable, predictable and fast whenever it went out. Mercedes, meanwhile, was struggling, its car hampered by rear-end instability. And the same went for the team now called Aston Martin, formerly Racing Point.

WHY ARE LOW-RAKE CARS AFFECTED MORE?

It has become clear that the concerns expressed by Racing Point/Aston Martin as the 2021 rules were being developed last year were well founded.

Track the performance difference between each team's cars across the 2020 races and their 2021 equivalents and a clear pattern emerges. Haas has lost the most performance from year to year – but then it would, since it has made it clear it hasn't developed its car from one year to the next. But comfortably the next two worst-affected teams are Mercedes and Aston Martin.

After the Austrian Grand Prix, Mercedes' car was on average 1.702% slower than last year, Aston Martin's 1.655%. Red Bull's, by contrast, is only 1.069% slower, Ferrari's 0.907% and McLaren's 0.78%.

So why would a low-rake car be more badly affected by these regulation changes than a high-rake design? It's hard to get a definitive answer, but one convincing theory revolves around the differing ways the two aerodynamic approaches deal with something called tyre squirt, the disturbed airflow generated at the contact patch of the tyre.

With very little left to be squeezed out of the low-rake concept, Mercedes was no longer finding sufficiently useful gains

In this specific instance, the issue is the 'squirt' generated on the inner shoulder of the rear tyres, on the edge of the diffuser. Teams want the fastest, cleanest airflow running through the diffuser to generate optimum downforce. But tyre squirt is low-speed, messy air, the last thing an aerodynamicist wants there.

Think of the two differing design philosophies used by Formula 1 teams as the difference between speeding up the water coming out of a hose by either opening the tap further, or squeezing the end of the hose.

Both lead to faster flow, but for different reasons. The high-rake car is the open tap. It has a much greater volume of air flowing through the diffuser. The air is turned outwards by the vertical fences in the diffuser, creating an out-washing effect, which sweeps the tyre squirt out of the diffuser.

A low-rake car deals with tyre squirt in a different way. The floor edge is close to the ground and generates vortices – twisting bodies of air, like a mini-tornado. These are directed down towards the inner shoulder of the tyre and deal with the tyre squirt at source.

Removing the 'cheese slice' makes it harder to generate those vortices. Which means more disturbed air gets into the diffuser space, reducing downforce. And because the floor is closer to the ground, a low-rake car does not have the same air mass to out-wash the 'squirt' away.

THE IMPACT OF F1'S COST-SAVING RULES

The next issue facing Mercedes dates back even further than the early days of the pandemic, but was exacerbated by Formula 1's COVID changes.

Part of the shake-up pursued by Liberty Media since the US giant took over F1 in 2017 is a budget cap. Pre-pandemic, after years of wrangling, this was set at \$175m per season. But Covid focused minds on the need to drive costs down further, so it was agreed to lower the cap limit to \$145m (£114m) in 2021, dropping down a further \$5m a year to \$135m by 2023.

On top of this, to try to close up the field, F1 has introduced aerodynamic testing restrictions (ATR), a sliding scale of permitted research in which the most successful teams are allowed the least and the least successful the most. For Mercedes and the other top teams, reducing their budget spend to the cap level is hard and has required some difficult choices. At the same time, for the first six months of the year, Mercedes as world champion was permitted only 90% of the standard aerodynamic testing allocation of windtunnel runs and computational fluid dynamics data (CFD).

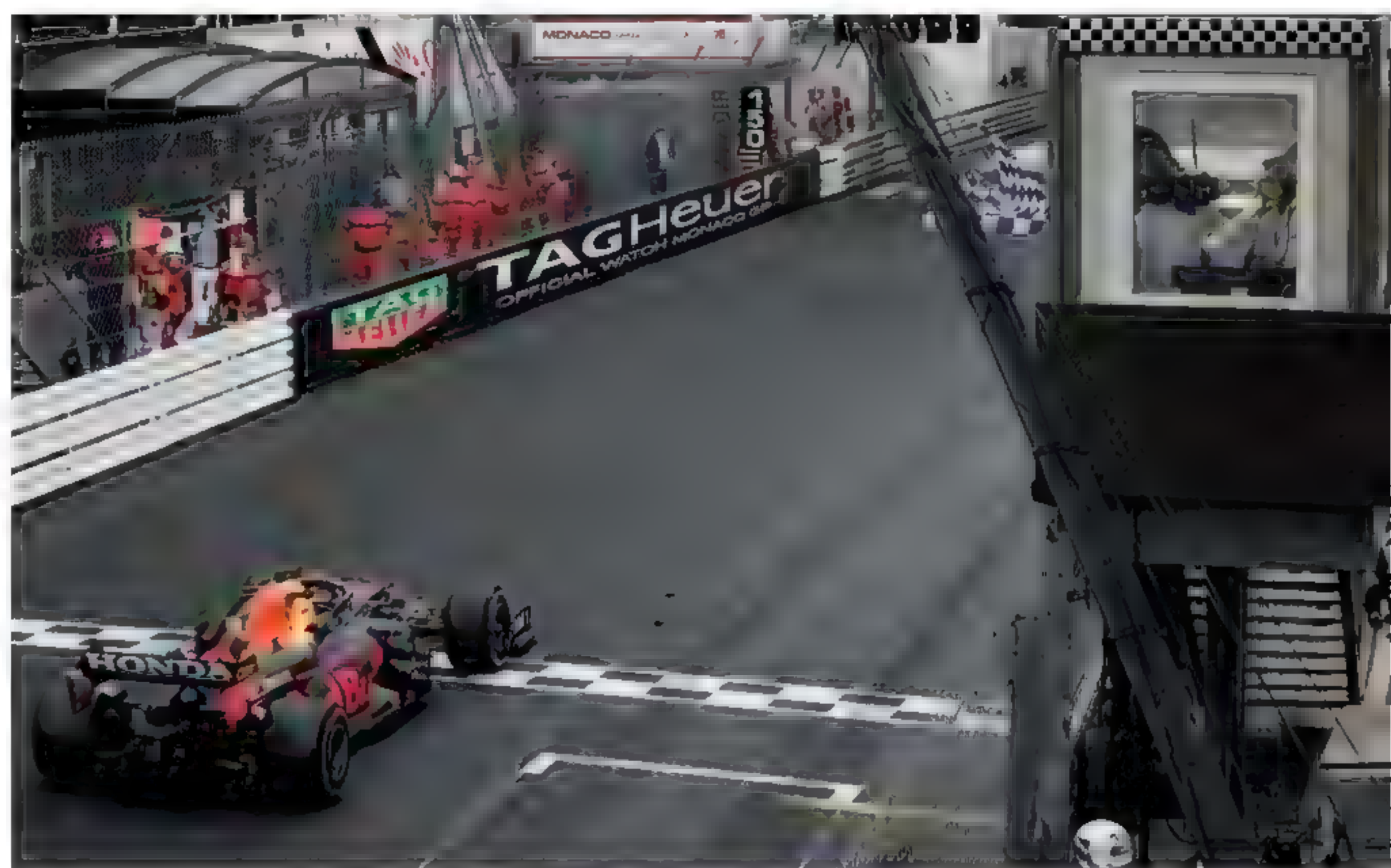
So, in essence, Mercedes faced a perfect storm – a car badly affected by a regulation change, with a concept that was harder to develop than its rivals, restrictions on the ability to change that concept, at a time of new limits on both resources and research, while also having to design an all-new car to a completely different aerodynamic concept for 2022.

All teams have to balance work on their existing car with that on the next, and work naturally shifts away from one towards the other as the year goes on. This year those decisions are harder. But Mercedes, struggling to find the usual gains with its existing car, was faced with the problem of diminishing returns, while knowing that every bit of work it did on 2021 was money and time it could not devote to 2022.

Technical director James Allison says: "What has definitely been true is that ever since the rule changes that were introduced aerodynamically for looking after the tyres, we have found it hellishly hard to find the sort of performance gain rate that we did prior to those rules, so that has made our lives trickier than we wished it to be."

It is not a question of sacrificing 2021 for 2022, simply a logical decision to devote limited resource where it will have most effect. With very little left to be squeezed out of the low-rake concept, Mercedes was no longer finding sufficiently useful gains. It made it easier to devote more time earlier to

Less affected by the 2021 regulations, Red Bull is now able to fight and beat Mercedes and Max Verstappen has taken full advantage of the RB16B's improvement



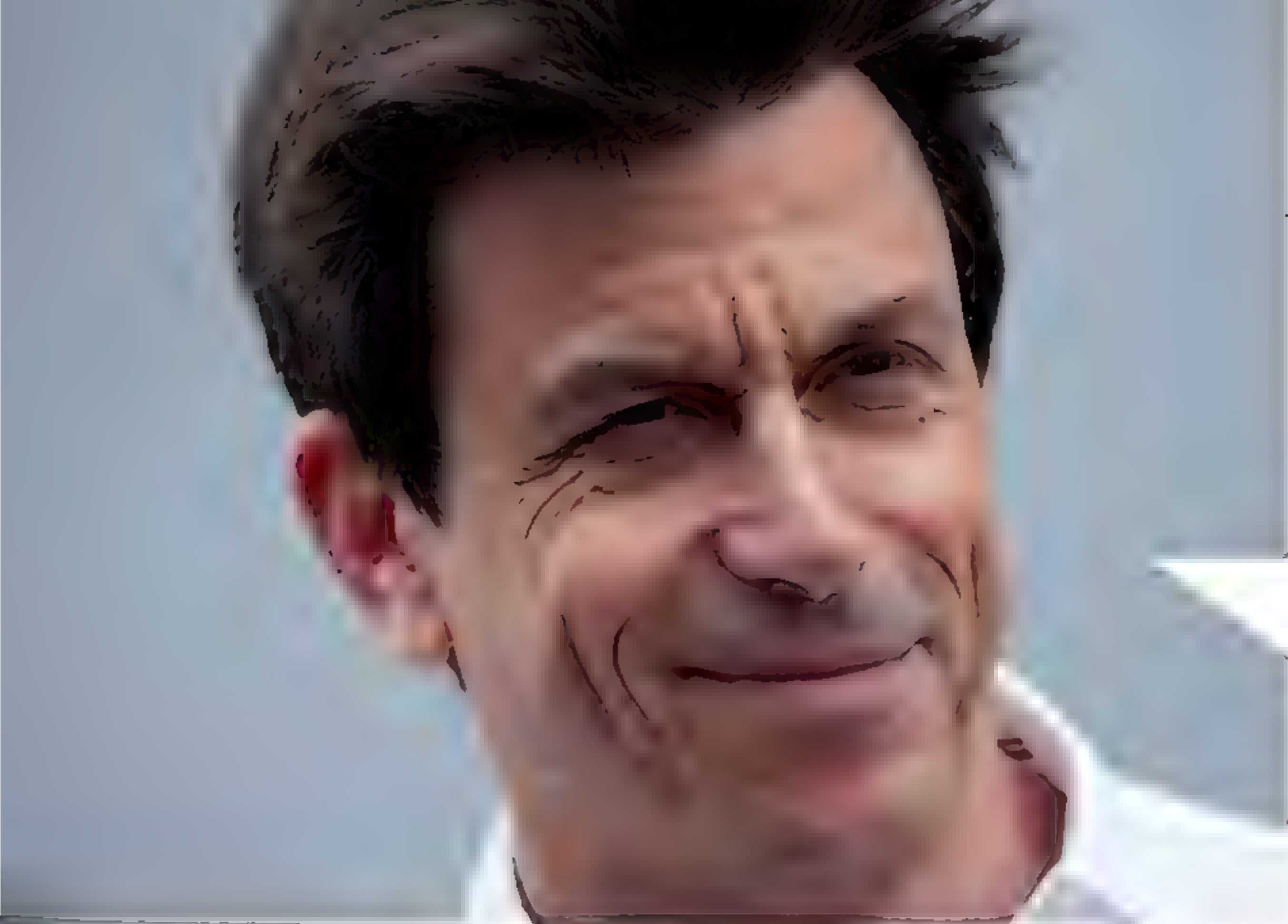
2022 than it might otherwise have been.

"We know how the technical directives have evolved for 2021," team boss Toto Wolff says. "We have been on the receiving side. Fact. We continue to stick to our principle of putting our resource into 2022, with all the consequences that can happen in 2021."

WHAT ABOUT RED BULL?

Red Bull finds itself in a very different place. It faces similar problems meeting the budget cap, and had only 2.5% more permitted research than Mercedes in the first half of the year – and the two swapped places from July onwards because Red Bull ended June leading the championship.

But last year's RB16 was a new design concept for this ▶



A PERFECT STORM

"I am always a sceptical person, half-empty glass. But I am seeing the positives. This is a long game. We are not looking at a single race or a single result, but trying to optimise every year"

team – as opposed to Mercedes' design being essentially an evolution of a car first introduced in 2017 – and, firmly wedded to high rake, Red Bull was less badly affected by the 2021 aerodynamic rules.

The upshot was that 2021's upgraded RB16B was now suddenly at least as good as the Mercedes, and Red Bull was still finding significant development gains. It was its first chance of a world title since 2013, against a rival that was struggling. This was too good an opportunity to pass up.

So while Mercedes had a few small developments on its car in Spain, and nothing thereafter until the British Grand Prix, Red Bull has continued to update its car. From Baku onwards this accelerated, with multiple vans turning up at every race with boxes and boxes of new parts, updating the front wing, nose, bargeboards, floor and diffuser, among other areas.

Red Bull, too, is having to balance 2021 and 2022, but the tone of its public messaging on the issue is very different from that of Mercedes. Asked in Austria when development would stop on the 2021 car, team principal Christian Horner said: "Abu Dhabi." Was he joking? Maybe. Maybe not.

"Look, you have to go week by week, race by race," Horner said. "The team is doing a great job of balancing the challenges of this year and next. It is nothing new. We have had big regulation changes in the past. You just have to balance your resource and apply it to what needs it most."

And of course "what needs it most" is a subjective decision based on where your priorities lie. Red Bull motorsport adviser Helmut Marko has been even starker: "We don't want to make the same mistake as BMW did in 2008. [Robert] Kubica had a realistic chance of winning the championship, but the business plan was to switch to next season early on."

Marko's response to questions as to whether Red Bull would pay the price for this decision next year was: "No risk, no fun! We have to manage that somehow."

SO IS IT ALL OVER?

Mercedes is a long way from giving up and has worked behind the scenes to haul Red Bull back, winning rule clarifications on flexible rear wings and pitstops. Still, at face value, things look bleak for Hamilton and the team. It has stopped developing its car, and is facing a rival with an apparent performance



Red Bull's continued development of the RB16B is to avoid the mistake BMW made in 2008 when it gave up Kubica's title shot


advantage – and which is still improving its own car.

But Wolff rejects the idea that this means Mercedes has effectively resigned itself to damage-limitation this season.

"We never resign any battle," he insists. "If I had to resign, you will see me going down the fire with my hand and the sword straight up. I am always a sceptical person, half-empty glass. But I am seeing the positives. This is a long game. We are not looking at a single race or a single result, but trying to optimise every year."

"We just need to do the best of our package. It's not a secret. There is a trend. They have the faster package at the moment and we need to utilise our tools and our intelligence and our car set-up work, the tyres and we need to be faultless."

"And I believe if we can align those stars, we can win the championship. There is a long way to go. It is a very enjoyable life experiment that I see ourselves in. We have a great mindset in the team and the values we have are the immune system of the team. The immune system means you need to function when things are going bad, and after seven consecutive championships, we are fighting a tough battle at the moment against all odds."

"I wouldn't say enjoyable is the right word, but it is the new experience that will make us stronger in the long run. Every day is a new learning experience and every day makes us stronger even if we have so many consecutive weekends that are tough. And I think we will look back many years from now and say: "That was necessary." 

Andrew Benson is BBC Sport's chief F1 writer

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ALPINE'S





SUMMIT FINISHER

Esteban Ocon didn't join Alpine to be part of the scenery – and now F1's most ambitious team has rewarded one of F1's most ambitious young drivers with a whacking great three-year contract extension. What has he done to impress the team so much – and what has it done to persuade him to throw over a potential Mercedes drive?

WORDS LUKE SMITH PICTURES ALPINE &  **motorsport**
IMAGES

FROM THE SEASONED VETERAN TO the hopeful debutant and all points on the career trajectory in between, stability is a commodity all Formula 1 drivers covet. For those looking to gain a foothold in F1 that usually means a manufacturer team's junior academy or a wealthy benefactor – even the most talented prospect might not be able to flourish without powerful support and investment.

That's something Esteban Ocon has rarely been able to rely on. He's seen a lot that most Formula 1 drivers haven't. He's lived out of a caravan with his parents, who sold their family home to keep him karting. He's faced uncertainty in junior series despite a stunning record (it is often overlooked that he beat Max Verstappen to the European F3 title). Twice in F1 he's raced for teams operating on the edge of financial oblivion, and slipped through the cracks in the driver market as a result – at one point spending a year on the sidelines.

But Ocon's resilience has paid off. With Alpine he's found a home for the long-term, a status now expressed in black-and-white in the form of a three-year contract, signed and announced in June, which binds him to the French team until at least the end of 2024.

Ocon has therefore joined a rarefied long-contract club. Last year Charles Leclerc and Max Verstappen signed extensions binding them to their teams until the end of 2024 and 2023 respectively. Daniel Ricciardo's first McLaren contract was for three years, while Lewis Hamilton's new deal is a two-year extension to the one-year contract he signed at the start of 2021.

It points not only to how much Ocon has impressed Alpine since his return to Enstone in 2020, but also that the team sees him as the ideal driver to fulfil its longer-term goal of returning to F1's summit.

Throughout his chat with *GP Racing* Ocon returns to a distinctive phrase to describe his new deal: as a way to "continue the story" with the Enstone-based operation. Indeed, over the past decade his career has intersected many times with this team's numerous incarnations. As early as 2010, the 14-year-old Ocon was snapped up by Gravity Sports Management, a group owned by the company which had recently bought a majority stake in the Renault team and was soon to rebrand it as Lotus. "I was training in the HPC [Human Performance Centre] in Enstone, seeing the drivers and thinking, 'one day, I want to become one of those,'" Ocon recalls.

But this wasn't to be a tale of a gilded path to glory. As Lotus's financial woes mounted, Ocon, who had won the 2014 European F3 title ahead of Verstappen, was forced into a sidestep, moving

into GP3 as Max took the step up to F1.

Mercedes threw Ocon a lifeline by making him an affiliate of its young driver programme, and his charge to the GP3 title paved the way for him to become a fully fledged member as of 2016. After half a season in DTM he was 'placed' at the Manor F1 team (which would go bust at the end of the season) where his performances and personality were enough for him to leapfrog Pascal Wehrlein in the Mercedes pecking order and land a seat at Force India for the following year.

But even as Ocon proved to be a good match for Sergio Pérez in their two seasons together, he found himself facing the exit towards the end

of 2018. Force India's financial collapse – can you see a theme here? – and rescue by Lawrence Stroll spelled doom for Ocon's prospects of staying on. Pérez's portfolio of sponsors meant his position was secure, while Stroll's son Lance was almost inevitably destined to occupy the other seat. At the height of the crisis, Over the Belgian GP weekend, it wasn't even certain Ocon would be racing one week later at Monza.

Mercedes kept him in a holding pattern for a season as reserve driver for 2019 and, while it might not have been much fun for Ocon, he didn't fade from F1's radar. When Mercedes opted to retain Valtteri Bottas for 2020, Renault



"I'M VERY SURE THAT THE EXPERIENCE AT MERCEDES, MY EXPERIENCE AT FORCE INDIA, IT ALL MADE ME THE DRIVER I AM TODAY, WHICH IS A MORE COMPLETE DRIVER AND MORE EXPERIENCED"



Ocon has a stable base on which to build his long-term future in F1 and is excited with the potential that he has seen at Alpine

moved swiftly to sign Ocon on a two-year loan, deciding he was a better mid-term bet than Nico Hülkenberg. Ocon was no longer a Mercedes 'young driver' but retained links to the team through his management.

"It's been a very strange way in my career," Ocon acknowledges. "I've been through difficult times, from a team perspective but also from my perspective. But I always believed that if I had more motivation than everybody else, people would see it.

"Life is not always easy, and you'll always learn from tough moments. I'm very sure that the experience at Mercedes, my experience at Force India, it all made me the driver I am today, which is a more complete driver and more experienced."

Ocon's year on the sidelines left him a little ring-rusty and he struggled to match his new

team-mate Daniel Ricciardo's form in the much-improved Renault. He was often unable to extract the maximum performance from the car in qualifying, which then made for harder work on race day. Finally at the Sakhir Grand Prix Ocon strung a full weekend performance together and took advantage of Mercedes' meltdown to finish second, netting his first F1 podium and proving that he could seize the moment.

"We've been through tough times where it was not working the way we wanted, and we managed to figure out the issues," Ocon says, reflecting on his comeback season. "The podium definitely helped. The team was very happy. They knew they could count on me, at times where we have to perform, at times where there is the opportunity, they realised they could really count on me.

"And from then on, we understood more about the car and how it started to work, and the characteristics of it. Through this year, we kept that going, and we did an even better job, I would say, with the new team that I have around me."

As Renault became Alpine for 2021, the changes reached beyond the name above the door and the colour of the car. Two-time world champion Fernando Alonso – renowned for being tough on his team-mates – arrived, as did a new management team headed up by Alpine CEO Laurent Rossi with co-managers Davide Brivio and Marcin Budkowski beneath him.

But Ocon's side of the garage also underwent changes. Josh Peckett replaced Mark Slade as Ocon's race engineer, while Stuart Barlow was drafted in to replace Peckett as performance engineer. The trio previously worked together at ►

Manor when Ocon made his F1 debut.

"He's bonding better with his race engineer and his team overall," says Alpine executive director Budkowski. "He can work in a much more constructive way than he was able to last year. And then the confidence builds up, especially in the qualifying sessions. If you have to put everything together and you need this kind of osmosis with the car and the team, this makes a difference."

That chemistry was evident from Imola to Monaco as Ocon notched four straight points finishes and reached Q3 on three occasions, including third-row starts in Portugal and Spain. After seeing Alonso destroy Stoffel Vandoorne 21-0 in qualifying through 2018, to record four straight Saturday and Sunday wins over the two-time world champion was an impressive feat.

Budkowski hailed Ocon to be "a significantly improved driver", while Alpine CEO Rossi revealed in May that talks were already underway about securing a contract extension – unconventionally early by F1 silly season standards. He made clear no other drivers were being considered, despite rumours about AlphaTauri's Pierre Gasly (not to mention the gaggle of Alpine juniors in F2), so impressed was the team by Ocon's performances. Rossi even went as far as comparing Ocon with F1's greatest French driver, Alain Prost, for being "a great fine tuner" and "very good at extracting the maximum from the car".

It made news of a new contract in June unsurprising, even if the length of the deal was. But for Rossi, the chance to lock down a driver of Ocon's ability was a "no brainer".

"We have a mid-to-long term view of things," Rossi explains. "We've seen enough of Esteban, we know he is good. I don't want to be here again, looking for another driver after two years. Recent past showed that it never really turns the right way. If you have a good driver, you want to keep them. We have a long way to make progress.

He buys into the project, and adds credibility to our project. It's a guarantee that we're going to perform on the driver department."

Ocon is excited by the potential he sees at Alpine, which is very much at the beginning of its journey to the front. With new regulations in 2022 and the budget cap set to level the playing field, giving the Renault-backed team a chance to fight its more established manufacturer rivals, he feels the opportunity will be there down the line to fight for more than just points.

"We're doing a really good job," says Ocon,

who then throws in a disclaimer over "recent races" after a dip in form post-Monaco that led him to ask for as many parts as possible to be changed on his A521 car for Silverstone.

"If we keep doing the job we can, extracting the maximum out of the car with the performance we have, it could be a top-10 today. But if we manage to do that in the future, maybe it's going to be a podium car. This gives me confidence about keeping the work with the team together for that many years."

Rossi is also eager to place Ocon at the heart of



"EVEN IF IT'S TOUGH AT TIMES THIS YEAR, WE KEEP ON WORKING. IT'S ONLY LESSONS THAT WE ARE GOING TO LEARN FOR THE FUTURE. OF COURSE, WE'RE COUNTING ON THOSE NEW REGULATIONS. WE NEED TO DO A GREAT JOB THERE"

Alpine's future, getting as much input from him as possible, which is quite the compliment to a 24-year old. "In-between the races, when he's not here, he's asking me, 'what do you think we can still do?'" Ocon says. "Even if it's tough at times this year, we keep on working. It's only lessons that we are going to learn for the future. Of course, we're counting on those new regulations. We need to do a great job there. But I feel very well integrated in the team and ready to work with them for that many years."

"He's very generous with his time, constantly



giving his time even to us in the larger Alpine construct,” says Rossi of Ocon. “He always offers to join in the development of the new cars, or the brand awareness type of work. It’s really good to have him around. That’s also why we signed him for three years.”

Alpine clearly thinks enormously well of Ocon – so why didn’t Mercedes opt to snap him up, given the obvious connections?


Toto Wolff made clear early on that it would be “Laurent and Esteban’s call first” before Mercedes got involved, saying how impressed he was with Ocon’s improvement and growth. When Ocon sat down with Wolff and Gwen Lagrue, Mercedes’ young driver advisor, it was clear they felt Alpine was the best place for him to continue his development.

“We did talk together, and we decided that the best thing for me was to be at Alpine – to develop a strong relationship with the team, have potentially a great car next year, and to be fighting there,” says Ocon. “I’ve seen how changing team to team could be tricky in the beginning, and how long it takes to settle. I thought, let’s keep the story going [with Alpine], let’s continue, and do the best we can. I was very keen to stay here for very long.”

Ocon’s three-year deal contains no Mercedes-related clauses that would allow it to pluck him away, and Wolff is explicit that Ocon is “100% an Alpine driver”. But it’s hard to imagine him not being high up the list in the future when Mercedes comes to consider driver signings. George Russell may be the heir apparent at

Brackley, but Lewis Hamilton has to hang up his helmet someday. By then, Ocon is likely to have gained plenty from the team-building experience he will be at the heart of at Alpine that could make him a valuable asset to Mercedes.

But for now, Ocon and Alpine are in it together, flying the Tricolore and looking to capitalise on the forthcoming regulatory overhaul to make ‘Team Enstone’ a dominant force again. And the secret to achieving could be the one thing Ocon has craved for so much of his career: stability.

“We have a great shot of doing very good if we produce a great car in the next three years,” Ocon says. “And if it is as close together between the cars as everybody is saying, to have stability is going to be a great thing I think. That could make all the difference.” 



THE REUTEMANN MYSTERY

One of the defining Formula 1 drivers of his era, the late Carlos Reutemann *should* also have been a world champion.

The reasons for the 1981 title slipping out of his grasp remain the subject of impassioned debate to this very day.

Andrew Benson
investigates...

FORMULA 1 motorsport

IN MANY WAYS,

Carlos Reutemann came to be emblematic of an era in Formula 1.

The Argentine, who died aged 79 on 7 July after a long battle with cancer, was not the most famous driver of his time. He didn't become world champion. His career was not as dramatic as Niki Lauda's. He was not a notorious playboy in the manner of James Hunt; nor as outspoken and high-profile as Mario Andretti.

But with his film-star looks, his sublime ability, and an enigmatic personality, he was an especially glamorous and evocative figure. In the complexity of his appeal, talented but mysterious, handsome and unknowable, few have come closer to the popular image of a racing driver than Reutemann.

Tall and lean, with striking blue eyes, dark skin, dimpled chin and smile full of brilliant white teeth, Reutemann was gorgeous to behold. And at his best, his driving was the same.

For a man with a reputation for being brilliant on his day, but anonymous if things were not quite as he wanted them, his was a remarkably successful career in an especially competitive time. Spanning the decade from 1972-82, Reutemann won 12 grands prix – as many as the 1978 and 1980 world champions Andretti and Alan Jones, and more than the 1976 and 1979 title winners Hunt and Jody Scheckter.

Reutemann was one of only two men in history to put a car on pole for his maiden grand prix. He drove for Brabham, Ferrari, Lotus and Williams, all the leading teams of his era, and was runner-up in the world championship once, and third three times.

Reutemann should, too, have been world champion, and the season in which he just missed out – 1981 – serves as an effective microcosm of his entire career. Driving for Williams, alongside reigning world champion Jones, Reutemann lost out by a single point to Brabham driver Nelson Piquet.

Their battle came down to a final-race showdown in Las Vegas, on a circuit constructed in the car park of the Caesars Palace casino. And from Reutemann's point of view, it was, on the face of it, one of the most incredible capitulations in Formula 1 history.

Starting from pole, Reutemann was down to fourth by the first corner, and finished the first

lap fifth. By lap 17, Piquet, too, was past him. And although the Brazilian was semi-conscious in the car for the last part of the race, his head lolling in the cockpit as heat exhaustion took hold, he finished fifth. Reutemann was eighth, lapped by the winner – Jones, his team-mate.

It was one of the most puzzling performances by an F1 driver there has ever been, and it came at the end of a year full of drama, intrigue, controversy and tragedy, in the midst of arguably the most turbulent time in Formula 1's history.

Reutemann had joined Williams for the 1980 season, not long before turning 38. He had long been one of the sport's leading men, but he signed a contract that gave Jones priority. The personal bond between Frank Williams, Patrick Head and Jones was strong, and although Williams held his new driver in the highest regard, the team's owners and founders were determined to shepherd their friend to the world title.



Reutemann's best chance of a world title was undoubtedly 1981, but it all fell apart at the final race in Las Vegas

Reutemann was initially happy to play along. For the team, getting to know him took time. At Monaco, Head was watching the two Williams drivers in practice, and was somewhat perplexed.

"Carlos never really put a lap together," Head recalls, "and whereas Alan was pounding around near the top of the timesheets all the time, Carlos was sort of running around the bottom."

"I remember going down and talking to Neil [Oatley, Reutemann's race engineer] and saying: 'Tell your driver to get on with it, Neil.' And Neil in his quiet way said: 'Oh, I think Carlos knows what he's doing.' And then when we came to qualifying, bang, Carlos put it P1 straight away and for most of practice he was P1, and I think somebody pipped him right at the end."

Reutemann qualified second, beaten only by Ligier's Didier Pironi by just 0.069s, but 0.32s ahead of Jones in third.

Oatley, now director of motorsport research at ►

REUTEMANN WAS ONE
OF ONLY TWO MEN IN
HISTORY TO PUT A CAR
ON POLE FOR HIS
MAIDEN GRAND PRIX





McLaren, where he has had a long and successful career at the top of the design department, recalls: "Something that used to frustrate Patrick, but which was quite interesting, was that when we went to a circuit that perhaps we hadn't tested on, Carlos would go out in practice and he'd be doing lap times that were perhaps 10 or 15 seconds off the pace.

"He'd sort of split the circuit up into thirds or quarters and he'd run full speed through section one and then just slow down and think about what the car was doing and how he had to drive differently and what he might need to change on the car, and then slowly move around the circuit.

"Then suddenly he'd just put one lap in that was a stunning time when he'd linked them all together. Things like that were a fairly unique way of operating that I'd never come across."

Reutemann duly won in Monaco. It was his only win that year, as Jones took five and clinched the title. The following season, the same contracts were in place, but Reutemann was done playing second fiddle.

The first race of 1981, in South Africa, was held in the middle of the political stand-off between the governing body and the British teams known as the FISA-FOCA war. As the off-track arguments raged, the manufacturer teams – Ferrari, Renault, Alfa Romeo and a couple of others – backed FISA, and pulled out of South Africa. The race went ahead as a non-championship event.

On the grid, Reutemann asked both Williams and Bernie Ecclestone if it would ultimately count for the championship. Both assured him it would. He won brilliantly, having gambled on starting in the wet on slicks, correctly predicting the track would dry. He never got those points back. With them, he would have been champion.

Jones won the next race, the first round proper, in Long Beach, with Reutemann second, losing the lead when he was delayed behind a back marker. Then, in Brazil, came a turning point.

In another wet race, Reutemann led comfortably from the start, and, well in control, paced himself throughout. Jones, behind, expected to be let through, but Reutemann decided that his days of subservience were over. A pit board was hung out, saying: "Jones-Reut", indicating the drivers should swap places. But Reutemann crossed the line first, and the relationship between the two, never warm, was irrevocably broken.

For the first half of the season, Reutemann ►



CARLOS REUTEMANN'S F1 WINS

Year	Grand Prix	Circuit	Chassis	Engine	Tyre
1981	Belgium	Zolder	Williams FW07C	Ford Cosworth V8	Michelin
1981	Brazil	Jacarepagua	Williams FW07C	Ford Cosworth V8	Michelin
1980	Monaco	Monte Carlo	Williams FW07B	Ford Cosworth V8	Goodyear
1978	USA East	Watkins Glen	Ferrari 312T3	Ferrari F12	Michelin
1978	Britain	Brands Hatch	Ferrari 312T3	Ferrari F12	Michelin
1978	USA West	Long Beach	Ferrari 312T3	Ferrari F12	Michelin
1978	Brazil	Jacarepagua	Ferrari 312T2	Ferrari F12	Michelin
1977	Brazil	Interlagos	Ferrari 312T2	Ferrari F12	Goodyear
1975	Germany	Nürburgring	Brabham BT44B	Ford Cosworth V8	Goodyear
1974	USA	Watkins Glen	Brabham BT44	Ford Cosworth V8	Goodyear
1974	Austria	Osterreichring	Brabham BT44	Ford Cosworth V8	Goodyear
1974	South Africa	Kyalami	Brabham BT44	Ford Cosworth V8	Goodyear



excelled, and no performance was better than in Belgium. On Saturday, he had been driving down the cramped Zolder pitlane when a mechanic from the Osella team lost his footing and fell into his path. The young man sustained a fractured skull, and died in hospital the day after the race.

Reutemann was gravely upset by the incident, but not only did he put the Williams on pole by the huge margin of 0.85s, he took a dominant victory the next day, winning by 36 seconds. For Oatley, it was one of his most outstanding drives.

"The accident in the pitlane on the previous day put him in a very difficult frame of mind," Oatley says, "and to overcome that and still



Reutemann with Head (left) and Frank Williams in 1981, his last full season in F1



Jones (left) and Reutemann were never close but could share a joke or two...

perform to a very high level was a fairly unique situation. Not many people have had to go through that sort of experience before racing."

Four races later, after finishing second in the British Grand Prix, Reutemann had a 17-point lead over Piquet, in the old 9-6-4-3-2-1 scoring system, with six races to go. The title looked his for the taking. But after the race at Silverstone, he was, in Head's words, "incredibly negative".

"He came back into the motorhome," Head recalls, "and he said: 'That's it, we'll never win another race.'"

Reutemann's concern was tyres. Williams had moved to Michelin for 1981 after Goodyear pulled out at the end of 1980. But for the French Grand Prix, one before Silverstone, Goodyear returned, and Williams – and Brabham – went back to them, much to Reutemann's dismay.

Oatley explains: "Carlos had run Michelin tyres at Ferrari in 1977 and 1978 and done a lot of testing for them, and he had a great empathy with the people at Michelin and the way the tyres behaved. They were quite different to Goodyears.

"We weren't pitstopping in those days and the tyres had to do the whole race, and you had to look after them to get the best out of them.

"Goodyear tyres weren't bad and they obviously didn't do Piquet any harm, but Carlos's empathy with the Michelin tyres and perhaps slightly quirky characteristics and slightly quirky people, they just seemed to be at one with each

other. And I think he enjoyed being back in that position again in 1981.

"I don't think it was a handling characteristic. It was how the rubber came in and lasted through the race and how you looked after them. It was more the race performance than the

one-lap performance. He scored 49 points that year, and 37 were scored on Michelins in the first half of the year and 12 on Goodyears in the second half. Whether he willed that to happen subconsciously, I don't know."

Unhappy with the tyres he might have been, but there was still room for another defining performance. At the Italian Grand Prix, Reutemann produced possibly the lap of the season, putting the Williams on the front row, splitting the much more powerful turbocharged Renaults, nearly 1s faster than the next quickest naturally aspirated car, and 1.2s ahead of Jones.

"Carlos had a tremendous knowledge of what had happened to the car in the past," Oatley says, "so he could probably tell you exactly what gear he'd taken every corner on every race track he'd ever driven. And Carlos had a great bandwidth for storing information and how he could bring that back to use to go forward.

"We did a test at Monza in the middle of August, a few weeks before the Italian Grand Prix. It was just Williams there, with one car, and we had Alan Jones for the first day and Carlos for the second and, being August, the place was packed with spectators. There were probably 25,000 people watching just us run round.

"We did a normal test day with Alan and when Carlos took over we were really short of tyres. So the night before I just worked with Carlos, and worked out a big matrix of things we wanted to test. It was an incredible amount of work.

"As we were the only team there, Carlos would go out and do one flying lap and as soon as he went past our timing line, he'd hit the brakes, do a U-turn on the track, and come back in the pit entrance and off he'd go again. This massive, precise test programme we had, we managed to achieve by just doing that.

"He was willing to run through this whole gamut of different suspension and aerodynamic set-ups. Then when we came back for the race we were on the front row, in the turbo era when Renault and Ferrari would normally be way, way stronger than us at that circuit. He did a stunning lap where he was really at one with the car.

"CARLOS HAD A GREAT BANDWIDTH FOR STORING INFORMATION AND HOW HE COULD BRING THAT BACK TO USE TO GO FORWARD" NEIL OATLEY

"It was really, really light downforce but such a good balance that we were able to keep a good corner speed without such a high wing level, right on the edge but it just suited his style.

"Unfortunately, when we were on the grid for the race, it just started to sprinkle with rain and ▶

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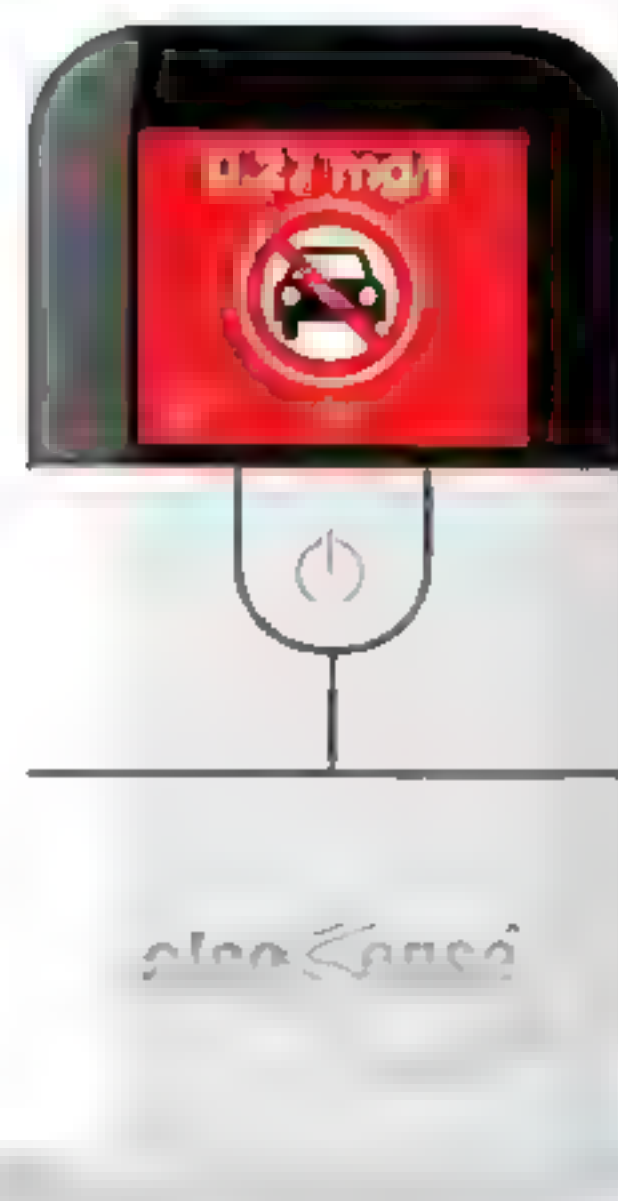
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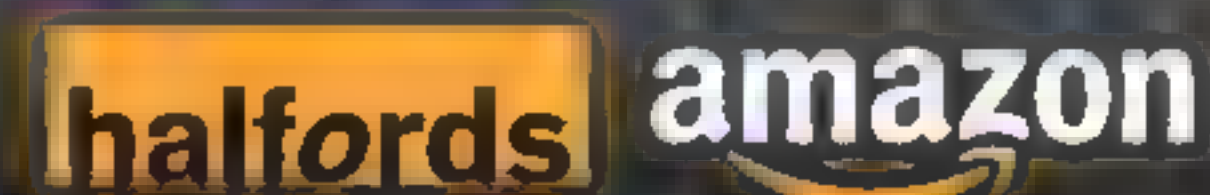
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that completely threw him. He completely lost confidence because it was such light downforce and he just felt really uncomfortable. Alan had a fight with someone in Chiswick High Road a couple of days before and broke his finger and he was driving with one finger sticking out but he still beat Carlos in the race."

There were two races to go. In Canada, Reutemann was again on the front row, but in the race it was raining, and the Michelins were much stronger in the wet. But Piquet still managed to salvage fifth, while Reutemann slumped to 10th and out of the points.

And then Vegas.



Head says: "Carlos was on pole, Alan second. Carlos was saying: 'That's it. It's a waste of time. I'm not going to win.' Unbelievably negative."

How to explain his steady drop through the field? Reutemann complained of gear-selection issues. Head says when they took the car apart "everything was in immaculate condition, so it was very difficult to understand, quite honestly".

Oatley, too, is mystified, if more forgiving: "He was having a little bit of gear-change trouble, which may have been exaggerated on that circuit where there are loads of hairpins and you are going up and down through the gearbox a lot.

"Maybe we made an error on the race set-

up. The car raced as it qualified and we had stiffer springs on Carlos's car compared to Alan's, and maybe over the course of a race distance, stiffer springs were not so easy to drive to be consistent. I don't know. That could be one factor."

After the race, Carlos slipped off to his hotel and then back to his farm in Argentina. Williams talked him into returning in 1982, when he was approaching 40, alongside

new signing Keke Rosberg. He lasted two races.

In the first, he took a brilliant second place at Kyalami, splitting the turbo Renaults on a power circuit and finishing 17 seconds ahead of the next naturally aspirated car. But after retiring in Brazil following a collision with another car, he

Although there were no points for it, starting on slicks at Kyalami in '81 was a masterstroke

was gone. The looming Falklands War was an influence, but Reutemann had just had enough.

"He had fallen out of love with it," Head says, "and the war gave him a... it would have been difficult with his country and England at war, driving for an English team, so I can understand him while the war was going on not driving."


Reutemann returned to his farm in Santa Fe, and became a leading politician in his home country for the final 30 years of his life.

Head remembers "an absolute gent". "Carlos was incredibly quick, if he wanted to be," he says. "But if his psychology wasn't with it, he would not be that way, so he was difficult... he was not like a normal driver, a very unusual person."

Head and Oatley both fondly recall a driver of rare talent. "He was a fairly singular individual," Oatley adds. "Very much his own man. He was incredibly quick a lot of the time, but not all the time. Occasionally, if things weren't quite right, he had a slightly non-linear reduction in performance. Which is not unusual, actually. A lot of drivers could fall into that category.

"There certainly would always be a technical explanation, but perhaps the effect of the technical issue had a psychological effect as well, which would increase the margins. One influenced the other."

And was it true, as some have said, that when he was at his best, he was "Senna-like"?

"Probably," Oatley says. "But not as frequently. Which was probably the problem." 

Andrew Benson is BBC Sport's chief F1 writer

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DECLINE

THE HISTORY OF LOTUS

AND

PART 5: 1985-94

FALL

Following the death of founder Colin Chapman, Team Lotus briefly revived before sliding towards oblivion – but what a glorious time this was, inducting Ayrton Senna into the pantheon of grand prix winners...

WORDS DAMIEN SMITH

PICTURES



motorsport
IMAGES



IS there a photograph that better captures the euphoria of victory than Steven Tee's black and white image snapped at the 1985 Portuguese Grand Prix? The image, one of Formula 1's finest, is seared into the fabric of grand prix racing folklore, as Peter Warr – wearing signature Peter Sellers specs, flat cap, black JPS jacket and an expression of exuberant jubilation – opens his arms wide to welcome home his conquering hero. It's tipping down, but who cares? Certainly not Ayrton Senna – at least not now the hard work is done. The belts have been thrown off so he can shoot an arm into the air and mirror Warr's celebration. You never forget the first time.

Thirty-six years later, the most vivid images of Senna we carry in our hearts tend to be in Marlboro McLarens. But it was in JPS black and gold, then in vivid Camel yellow, that the great Brazilian truly came of age, and it wouldn't have taken much for him to have created more moments like this for Team Lotus and be crowned its sixth world champion after Jim Clark, Graham Hill, Jochen Rindt, Emerson Fittipaldi and Mario Andretti. The cars were quick enough and so indubitably was the driver, already the fastest on the grid. If only reliability had matched the speed, mid-80s history might have been very different. Instead, the last great era of Team Lotus wasn't anywhere near as great as it should have been.

The key to the Lotus 1980s revival was Warr's canny decision to hire charismatic Frenchman Gérard Ducarouge to design his cars. Still reeling from the loss in December 1982 of founder and totemic leader Colin Chapman, Team Lotus was creaking when 'Duca' arrived mid-1983, burned by a painful experience at Alfa Romeo. He worked all hours to create the 94T in time for the British GP, using monocoque and suspension from the Type 91 but with improved weight distribution and on stiffer Pirelli tyres. Its impact on team fortunes was immediate and positive: Elio de Angelis qualified fourth at Silverstone only for his Renault turbo to blow on lap two. But team-mate Nigel Mansell, in his first start with turbo power, finished fourth and then scored a podium third at Brands Hatch's European GP, where de Angelis stuck

the new car on pole position.

But still the Lotus revival stuttered. Neither de Angelis nor Mansell managed a win in 1984 in the 95T, even though the Italian finished a distant best-of-the-rest third behind McLaren's Niki Lauda and Alain Prost. It took Senna's arrival in 1985, plucked from Toleman as replacement for Williams-bound Mansell, to really kickstart the final hurrah over three eventful seasons. Warr had tried to sign the new sensation straight out of Formula 3, only for John Player Special to insist on Mansell's retention because he was British. Given Warr's open antipathy for Chapman's last protégé it hardly made for a harmonious season. But Warr got his man – for a much higher price – a year later. His chase was more than justified as Senna scored seven pole positions, that unforgettable maiden victory at a sopping Estoril in one of the greatest wet-weather performances, plus another masterclass win at Spa. He led more laps than anyone, including first-time world champion Prost – and yet poor reliability contrived to leave Senna just fourth in the final standings. In a nutshell, the story of Ayrton's Lotus life.

Pity poor de Angelis who with hindsight stacked up pretty well to the maestro in 1985,

then ended his six-year Lotus spell and left for Brabham. Renault's withdrawal as a team entrant effectively left Lotus as the French giant's works team for 1986, which surely boded well – only for Senna to rattle Warr's chain. The team chief had been delighted to secure JPS-pleasing Renault refugee

Derek Warwick, but Ayrton balked. He saw the fellow ex-Toleman driver as a threat – an Englishman coming into an English team, and a quick one too – and it says everything about his growing influence and power that Warr, hardly a pushover, eventually relented. Newcomer Johnny Dumfries, Senna's dominant British F3 successor whose promise outshone his privileged background, signed instead – and sunk without trace as the team focused on its A-list star. As in his maiden season in black and gold, Senna was the king of qualifying, scoring eight more pole positions including at each of the first three races, but Renault's inferior fuel consumption to the Williams-Hondas and McLaren-TAGs compromised his race days. Sure, there were ►

IT TOOK SENNA'S ARRIVAL IN 1985 TO REALLY KICKSTART THE FINAL HURRAH OVER THREE EVENTFUL SEASONS





Peter Warr's open arms proclaim Ayrton Senna's first F1 win, at Estoril in 1985



In 1987 Senna triumphed in Monaco (above) and also won the very next race at Detroit, but they would be the last two Team Lotus F1 victories

golden highlights: beating Mansell by just 0.014s on a drag to the line at Jerez; a fine street-circuit win in Detroit where he stormed back after a puncture. But again Team Lotus ultimately let him down, despite the speed of Ducarouge's lovely 98T.

One last chance. But this time with Honda power and in lairy Camel yellow after JPS 'got the hump' (sorry) over the lack of a British driver in the 1987 line-up and walked away from Ayrton Senna wearing its colours. Thus ended one of the great F1 sponsor partnerships.

Senna was the hub around which everything revolved. Frustrated by Renault's failings, he demanded Warr land a supply of Honda turbos – and again the chief relented, welching on the solid deal he had with Viry-Châtillon, a move he would later claim to be a personal career lowlight. Still Senna wanted more, demanding a pay rise that Player's refused to meet. That was the beginning of the end for JPS, but then when Warr struck a big-money deal with Camel's parent

company RJ Reynolds over the winter, Senna returned from Brazil and claimed the change of title sponsor made his new Lotus contract null and void. Back to the negotiating table, where Warr was forced to cede the extra budget from Camel straight to the star driver's pocket. It would have been better spent on the 99T.

Japanese Formula 2 racer Satoru Nakajima lined up with Senna courtesy of that Honda deal, another nail for the JPS coffin, and he was never going to threaten Senna in nine months of Sundays. But even with the power of Honda's RA166E V6, plus computer-controlled active suspension devised by 'father of F1 ground effects' Peter Wright, Senna still lacked what he needed to challenge for the title his talent clearly demanded. The first of his six Monaco victories was a notable maiden for active suspension and he won again in Detroit with a canny tyre-conserving non-stop run to the chequer – it was never just about brute speed with Senna – to take the championship lead. But his hopes

spluttered through a disappointing summer and autumn, as he lined up a career-defining switch to McLaren. After everything Warr had done to try and keep him happy... although the chief saw it coming and snapped up Nelson Piquet, disenchanted by Williams despite the third world title that was coming his way. Senna was furious to be replaced by his mortal enemy.

Still, Lotus had equal Honda power to McLaren for 1988. There'd be life after Ayrton, surely? Barely. As Senna, Prost and McLaren swept to 15 out of 16 wins, Lotus and the reigning world champion, who carried the number one on his 100T's nose like some bad joke, managed just 22 points, Nakajima adding one more in Rio. Nothing seemed quite right at Lotus any more. The active suspension was gone, to allow Lotus Engineering to focus on road car applications (somewhere Chapman must have been spinning), and rumours started to circulate of a sale. Chief mechanic Nigel Stepney left for Benetton, long-time designer Martin Ogilvie



Peter Warr (left) hired Gerard Ducarouge as chief designer and his cars kept Senna happy until McLaren came calling for the 1988 season



had been arrested for conspiring to defraud. The full depth of controversy that the DeLorean affair had plunged Chapman into during his final years was only just starting to emerge. Bushell eventually served time – as the Old Man surely would had he lived – and Warr called time. For seven years following Chapman's sudden death, he'd done all he could to maintain the Team Lotus way. In Ducarouge and Senna, Warr had hired superbly well, but he'd been fighting uphill

for most of the way. Now it was time for others to put shoulder to the wheel.

In the big technical chair, Frank Dernie moved from Williams and did all he could in place of 'Duca' with Mike Coughlan as chief designer as they conceived the workmanlike 101, while veteran Tony Rudd steadied the ship. But lacking puff from the Judd, Piquet's mojo appeared to vanish completely. He and Nakajima managed 15 points between them, and Nelson's subsequent Indian Summer at Benetton surprised just about everyone who had worked with him in Norfolk. Turns out he still had it in him after all.

But amid the gloom there's nearly always a flicker of hope. A new supply of Lamborghini V12s for the evolutionary 102 promised a revival, especially now Warwick was on board, five years after Senna had blocked him. Bad timing, Derek – as usual. Beside him was highly promising Northern Irishman Martin Donnelly, fresh out of Formula 3000, but for both drivers 1990 was marked by two seismic accidents. Warwick shrugged his off. Donnelly wasn't so lucky.

At Monza, Derek charged out of Parabolica on lap one, lost downforce, understeered into the barrier and ended up sliding down the track on his head. His only thought was to get back to the pits for the spare and the restart – which remarkably he took, in a fresh helmet and after a check-over from F1 doctor Professor Sid Watkins, despite a sizeable headache.

But at Jerez the Prof had a little more to do. On the Friday morning, Donnelly signed an ►

moved away from F1 and up into Group Lotus – and then Ducarouge quit before the Japanese GP. Just to cap it all, Honda walked too in favour of an exclusive (and entirely justified) strengthened relationship with McLaren.

For one time only, in 1987, F1 had adopted the Jim Clark Cup for drivers and the Colin Chapman Cup for constructors as recognition for those running back-in-vogue (class B) normally aspirated engines – another acknowledgement of Team Lotus's indelible F1 imprint. But now turbos were outlawed, it was a painful irony that the team which had shone more than any other in the old Cosworth DFV days was left with no option but to fall back on a modest Judd V8 supply. At least Camel stuck around – for now. Mid-summer 1989, having stepped back from day-to-day operations, Warr was working on new sponsor deals with Coca-Cola and BP when devastating news broke that Fred Bushell, long-time Lotus money-man and a loyal Chapman ally dating all the way back to the Hornsey days,

Derek Warwick was blocked from joining Lotus in 1986 by Senna. He ended up at Brabham but would eventually become a Lotus driver in 1990





Some of the remains of Donnelly's 102 after his horrendous Jerez accident, when collapsed front-left suspension led to a huge shunt



option to stay at Lotus for 1991 and was handed a sizeable cheque to guarantee his services; in the afternoon, in the closing minutes of qualifying, he was left in a broken heap in the middle of the track, still strapped to his seat. Collapsed left-front suspension led to a head-on 140mph accident that should have killed him. That it didn't was largely down to the Prof's fast actions. They make them tough in N'ern Ireland: Donnelly rebuilt his life as a team owner on British racing's junior slopes and today remains in service to Lotus as a popular driver coach at

Mika Hakkinen got his Formula 1 break with Lotus in 1991 (above), but the team he joined was striving mainly to stay afloat

Hethel. But his chances of an F1 return were always slim to none.

In his place stepped up fellow 'Rat Pack' graduate and another with a sizable hobble. Johnny Herbert completed the 1990 season, then returned mid-1991 as old mentor Peter Collins

partnered up with Peter Wright to take the Lotus helm. Australian Collins was a Lotus veteran who had landed a dream job in the halcyon 1978 season only to fall out with Chapman and leave in the early 1980s. He'd earned respect for his assertive leadership of Benetton from mid-1985 until finding himself turfed by smooth-talking (if indecipherable) Flavio Briatore, and now found himself well placed to give something back to a team that meant everything to him. Collins did all he could between 1991 and 1994, just like Warr before him. But the uphill battle had become a mountain climb as Team Lotus lost its footing, not to mention the Camel sponsorship to those pesky Benettons.

Again, hope springs eternal. That year another promising F3 graduate stepped into the breach, in the form of a shy Finn called Mika Häkkinen, at first partnered by the talented but unfashionable Julian Bailey until Collins brought in Herbert (just as he had at Benetton!) The blond-haired duo, in 102s now powered by Judd V8s (them again), became F1's favourite underdogs – not exactly Lotus as we'd known it but, as Collins hustled to keep the team afloat, goodwill was sometimes all that was left. A supply of Ford HB engines, recalling memories of happier DFV days, powered a mini-revival in 1992 as Team Lotus finished a respectable fifth, ►



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The team managed fifth in the constructors' championship in 1992, mainly thanks to Häkkinen, before he too was lured to McLaren




largely thanks to Häkkinen. But inevitably Mika was soon on the move. Ron Dennis snapped him up for 1993, first as a McLaren test and reserve driver and then as replacement for Michael Andretti from the Portuguese GP – where he outqualified team-mate and fellow Lotus old boy Senna. Mika remained forever grateful to Collins and Team Lotus for the F1 grounding from which he eked every drop.

Chris Murphy, fresh from Leyton House,

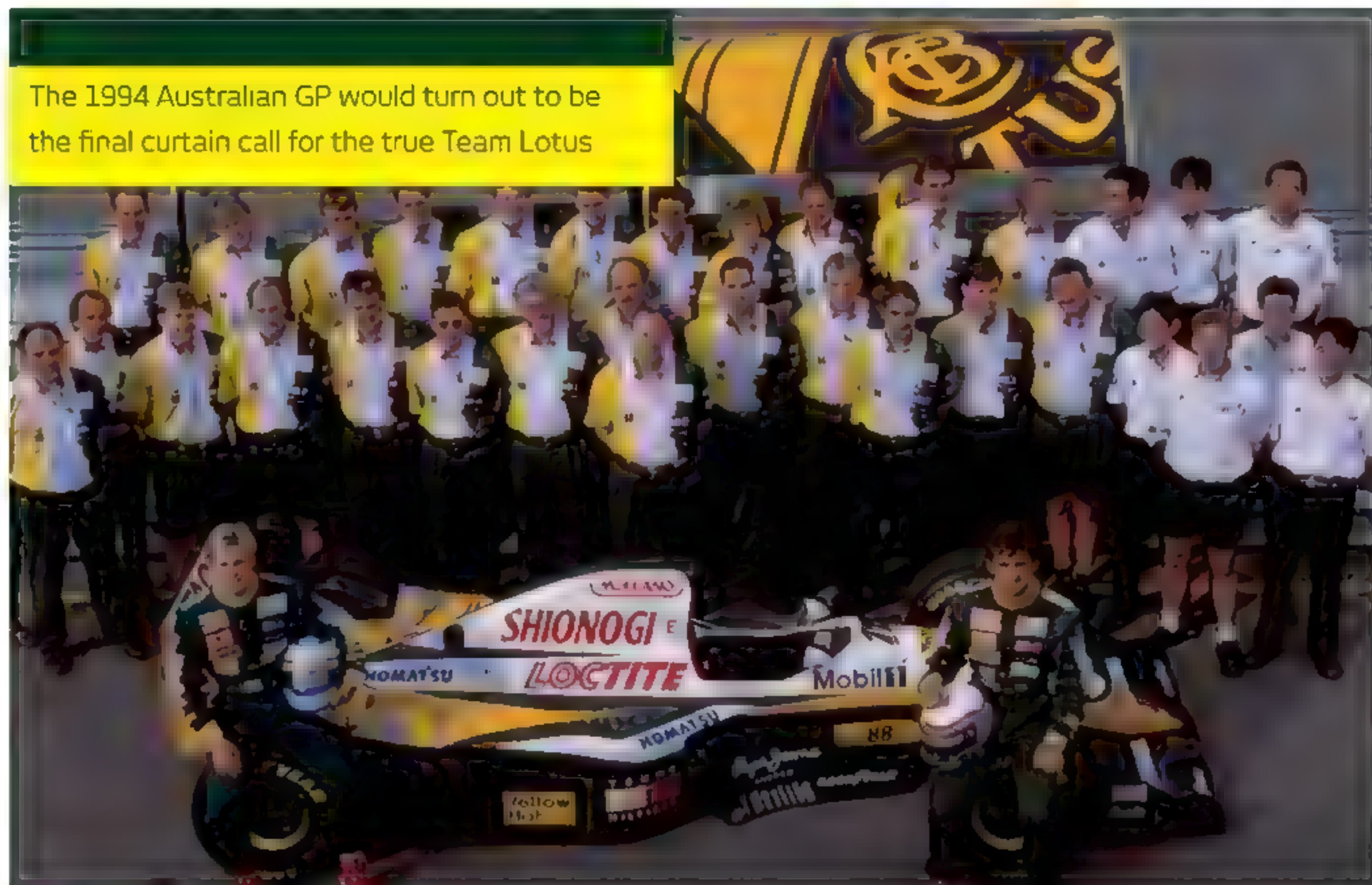
FOR THE LOTUS NAME, THERE WOULD BE AN F1 CODA, OF COURSE

designed the pretty 107 that laid the 102 to rest during 1992 and in B-spec form allowed Herbert to score when he could in '93, while Alex Zanardi shook Senna as Donnelly had with a massive shunt at Spa's Raidillon. Pedro Lamy's was even worse in the dark days of 1994, when he flew over the fencing while testing at Silverstone, landing in an empty spectator tunnel. He recovered from his leg injuries to race again in F1 before a long and fruitful career in GTs.

But for Team Lotus there was no happy ending. Like Brabham before it, this giant of F1 slowly shrivelled and finally ran out of puff. When Zanardi and Mika Salo both lodged DNFs at the 1994 Australian GP it marked a low-key final scene for a wonderfully rich epic. At its zenith and across its first two decades, Team Lotus outstripped every team including Ferrari, through thrilling peaks and head-scratching troughs – and under Chapman, then Warr and finally Collins these were the cars dedicated fans always pulled for.

For the Lotus name, there would be an F1 coda, of course – more than one, actually, and all at the same time. But ransacking history to badge cars with no connection to the line, from Type 25 to 79, 97T to 107, was little short of sacrilege. It shouldn't count. Team Lotus, the *real* Team Lotus, folded for good in 1994. But the euphoria will live forever. 

The 1994 Australian GP would turn out to be the final curtain call for the true Team Lotus



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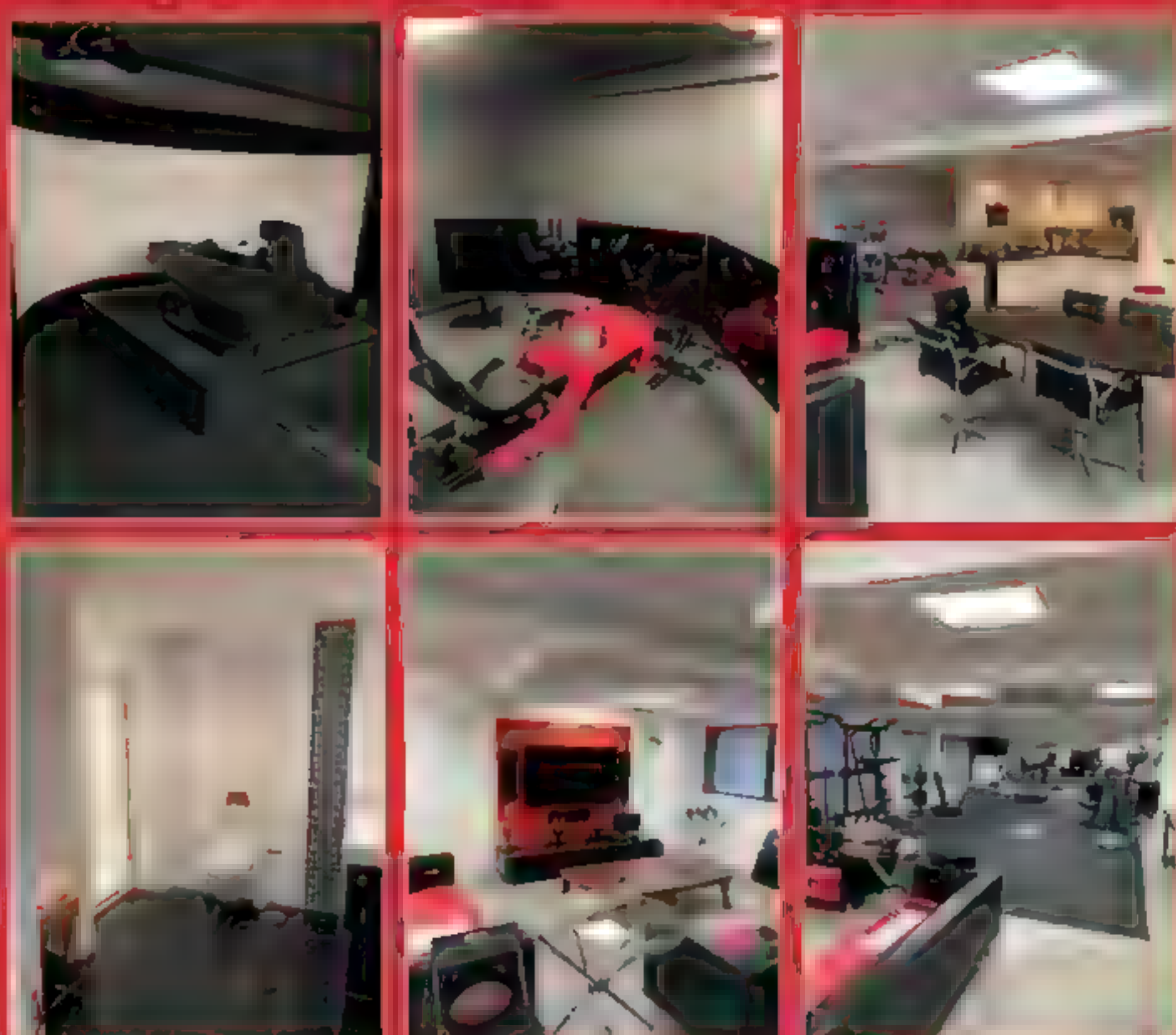
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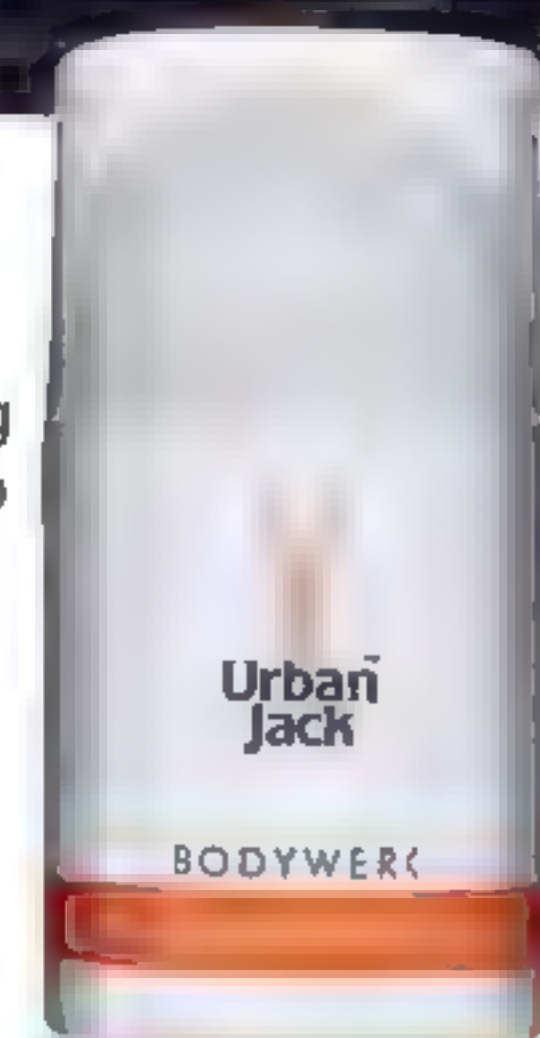
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BRIAN REDMAN

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BACK IN
THE DAY WHEN
APRIL ALWAYS
MEANT
IMOLA...

I used to delight in evening trips with Denis Jenkinson into the mountains, where we would find chunks of the Mille Miglia course, and he would share his memories of the greatest sportscar race there ever was. Having accompanied Stirling Moss in the winning Mercedes in 1955,

he knew whereof he spoke.

One day Jenks said what fun it would have been to do the Mille Miglia in a Porsche 917. With Rodríguez? Siffert? “No, no,” he replied. “Given a choice, I’d have gone with Redman – he was as quick as they were, and far more intelligent. With Brian, there’d have been a much better chance of getting to the finish...”

Redman drove in only a dozen grands prix, but for him it was always important that racing be fun, as well as a living, and even back in 1974, when last he raced a Formula 1 car, he found the paddock a touch precious for his taste.

It was never the case that Brian lacked the ability to hack it in Formula 1. Far from it. He finished third in his second grand prix, at Jarama in 1968, and in the monsoon of Monaco in 1972, subbing for Peter Revson at McLaren, Redman was fifth, in the process lapping team leader Denny Hulme.

Although Redman is remembered primarily as a sportscar driver, his prowess in single-seaters was amply displayed in Formula 5000, where he defeated arch-rival Mario Andretti more often than not: “I had some fantastic races with Mario, and you know what, we never once touched wheels...” Modest to a fault, Brian would describe himself as ‘a good professional’; he was much more than that.

It was in 1965 that Redman first came to national prominence, winning endlessly in a lightweight E-Type, owned by Charles Bridges. The following year Bridges bought a Lola T70, which Brian raced with success, and in 1967 another member of the family took him into single-seaters.

“When Charles got out of racing, his brother David said to me, ‘D’you want to do F2?’



Redman enjoyed the atmosphere of F1 in the 1960s, until it became less friendly, and found the Formula 1 paddock a little too precious

I said “yes, what’s the deal?” He says, ‘I’ll give you thirty pound a week, guaranteed for a year’. Right, I said.

“We’d be away for a month, and when we got back he’d be sitting there, 10 o’clock in the morning, with a glass of whisky. ‘Hello, spud! Where’ve you been?’ ‘Well, Barcelona, the Nürburgring...’

‘Eeh, that were a grand trip – how did you do?’ ‘Well, we were fourth here, and sixth there...’ ‘Eeh, well, that’s all right, then. Where are you going next?’ Very casual it was, really...”

That same year Redman went to Spa for the first time, driving a Ford in the 1000Kms, and 12 months on, now a member of John Wyer’s JW Automotive squad, Brian won the race in a GT40, partnering Jacky Ickx. When he returned a fortnight later, though, to drive a Cooper in the Belgian GP, a horrifying accident awaited. At Les Combes his car’s front suspension broke.

“I went over the Armco, and my right arm was trapped between the car and the barrier. It was several hours before they operated – I remember shouting ‘Don’t cut the overalls off’ because they were new! – and the surgeon said it might not be possible to save the arm, so I was very lucky.”

Redman with Steve McQueen in 1970, filming on location for the iconic movie Le Mans



EE

I DID JARAMA, ZOLDER AND MONACO, BUT WHILE IN THE LATE '60S F1 HAD ALL BEEN A BIG PARTY, FIVE YEARS ON IT WAS MORE SERIOUS, LESS FRIENDLY

99

Redman thought the 'old' Spa the most testing circuit of all. "Every time I went there, I'd lie in bed, sweat pouring off me, because I thought I was going to die the next day. I loved the track, but you really didn't want to have an accident. Generally, though, it was lucky for me: I think I won five times there."

A few years on, in the 1972 1000Kms, Redman was leading in a factory Ferrari 312P, but Ronnie Peterson's similar car was closing. Les Combes again: "I noticed all this activity in the crowd, and I backed off and just got round. It had started raining at that part of the circuit, and the activity was people putting up umbrellas. Ronnie went right round the corner on the barrier. We won."

In most minds, though, Redman is synonymous first with Porsche. "When I joined them, in 1969, they asked if I wanted to be number one in my own car, or drive with Siffert. I knew, with Seppi, that I'd be number two, but I thought we'd win more races that way, so it didn't bother me."

The Siffert/Redman pairing won many times, and Brian got on famously with his mercurial team-mate, while conceding the partnership was not without its frustrations. "Seppi only had one speed – flat out. At Le Mans in 1970 we had a four-lap lead when he missed a gear, so that was mildly distressing..."

Years later Redman was told by a team member that at Spa he had been quicker than both Siffert and Pedro Rodríguez, and not long before Wyer died Brian was moved to ask him, "Why did you never tell me?" "My dear Redman," came the typically dry response, "if you'd known that, imagine what I'd have had to pay you!"

Late in 1973 Brian made a brief return to F1, driving a Shadow at Watkins Glen, alongside Jackie Oliver and George Follmer. "It was an older car, but I outqualified them, and was invited to join the team for 1974. I'd just had a good season in F5000, with Carl Haas and Jim Hall, so I decided to stay where I was."

"Shadow signed Revson, who was then killed testing at Kyalami. In the meantime, the US F5000 series had been cancelled, so when I got another call, after Peter's accident, I said yes. I did Jarama, Zolder and Monaco, but while in the late '60s F1 had all been a big party, five years on it was more serious, less friendly. When Haas rang to say the F5000 series was back on, I told Don Nichols I was going back. I was getting 750 quid a race, but I thought, 'I can win in America, and get prize money as well...'"

In 1977, during practice for the CanAm race at Mont Tremblant, Redman had his biggest accident, when his Lola did a back flip at 160mph. "I didn't see it coming – it had been fine to that point, but when Jim Hall asked if I wanted any changes, I said, 'Yes, take a quarter of an inch off the front wing'. Ha! That was what did it. On the next lap, it just took off, and as I went down the road, the roll-bar – and then my helmet – actually wore away. I had a broken neck, bruising of the brain, broken shoulder and ribs...I really wasn't in very good shape. My wife flew out from England, and when she arrived in Montréal she saw a newspaper with the headline 'Redman est mort'. Fortunately, they got that wrong."

For 40 years now Redman has lived in Florida, but his Lancastrian accent is intact, and complements a wonderfully dry wit. Now 84, he still drives racing cars fast, still comes across as a happy man. The once cruel scars on his face – legacy of an accident in the 1971 Targa Florio – long ago faded to nothing, absorbed into a deep tan. Mario Andretti once told me he thought Redman the most underrated driver motorsport has known, and I'm inclined to agree. 

Redman's 12 F1 starts were spread across seven years and in 1972 he competed in four races. The German GP was the last time he scored points



NOW
THAT
WAS
A
CAR
No. 101

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A podium finisher
first time out –
then never again

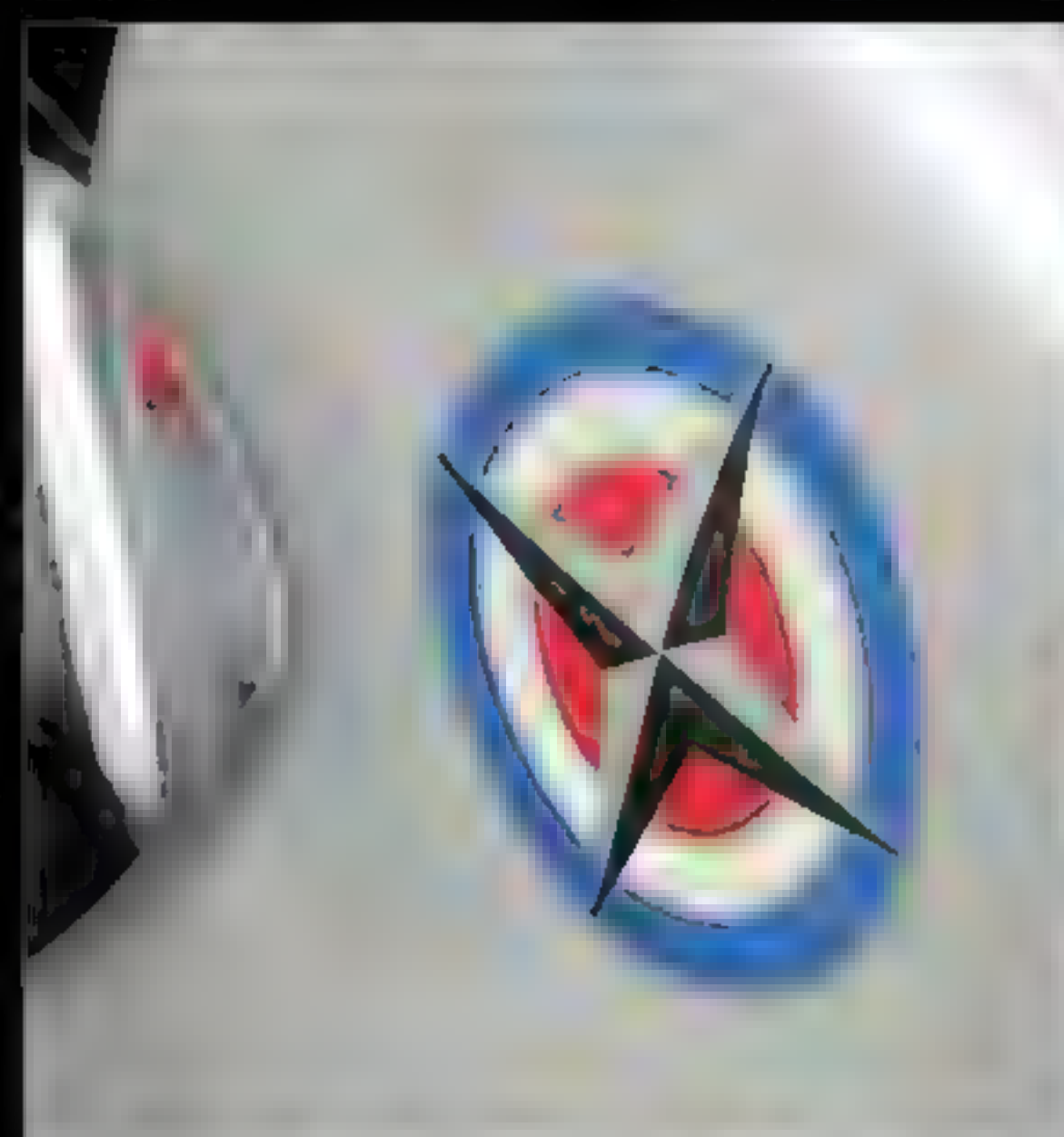


David Coulthard once declared “potential” a word which should be banned from motor racing, for the belief in it – the pursuit of it – has sent many a competitor down an insurmountable blind alley. The BRM P201 certainly had potential and, indeed, had Niki Lauda been behind the wheel – as he was initially contracted to be – perhaps it might have recorded more than one podium finish and arrested the quixotic British team’s slide towards oblivion.

“Perhaps” being a companion word for “potential”.

BRM was beginning to enter its death throes as 1974 beckoned. Formed nearly three decades earlier by pre-war ace Raymond Mays as a British engineering prestige project, aiming to emulate the German domination of top-level motor racing in the 1930s, it was a peculiar enterprise which too often fell far short of its lofty ambitions. It epitomised the belief in “potential”: its first F1 car fell so far short of the mark that the whole project had nearly come to an end as early as 1952, saved only by the ongoing largesse of a key investor, the industrialist Sir Alfred Owen. Further failures led to an ultimatum from Owen when his investment passed the million-pound mark at the turn of the 1960s, briefly yielding an improvement in the F1 team’s fortunes – a world championship for Graham Hill in 1962 – before BRM tied itself in competitive knots while trying to establish itself as a self-sufficient engineering consultancy.

When Sir Alfred suffered a serious stroke in 1969, effective control over BRM passed to his sister Jean and her husband, Louis Stanley – a fascinating character who had been attending



grands prix with BRM since 1959, acting as Sir Alfred’s eyes and ears on the factory floor, and who would preside over its eventual demise. It was said of ‘Big Lou’ that his fun club could comfortably be accommodated in a telephone kiosk. He styled himself as Britain’s answer to Enzo Ferrari and had a fondness for receiving business visitors at his offices in semi-darkness.

A sometime journalist and author, managing director of the Dorchester Hotel, and supposedly the son of a cotton trader from the Wirral, Stanley remains one of motor racing’s abiding enigmas. In recent years his stepdaughter Bobbie Neate wrote a searing exposé of Stanley’s life which included graphic revelations of child abuse – physical and sexual – and a compelling argument that he was the illegitimate son of Herbert Asquith, raised in secret and shielded by the establishment. While Stanley was also the honorary secretary of the Grand Prix Drivers Association and a supporter of Jackie Stewart’s safety campaign, funding a mobile medical unit at grands prix in the wake of Stewart’s horrific accident at Spa in 1966, his is an exceedingly problematic legacy to weigh.

Stanley’s preference when entertaining prospective drivers was to do so at the Dorchester rather than the BRM facility in Bourne, Lincolnshire. During these meetings – according to Lauda – Stanley would arrange to be called away to answer an urgent phone call which, he would explain upon his return, was the engineering department informing him they had found another 20bhp while trialling some new component.

If only such progress was genuinely being made, and with such urgency. BRM’s V12, originally a ‘Plan B’ concept for the

3-litre era which was hurried into service when Plan A (the flawed B16) was a humiliating failure, stubbornly refused to respond to development. Ex-Bentley and Coventry Climax engineer Walter Hassan, brought in as a consultant in 1972, later described in his memoir *Climax in Coventry* a scene of inertia, internal red tape and not-invented-here syndrome: "I am not trying to make excuses, either for myself or for BRM, when I say changes agreed in 1972 were still not fitted to the cars at the start of the 1975 season."

Tony Southgate, the ex-Lola and Eagle designer recruited in 1969 to oversee the next generation of BRM cars would also recall wearily how rather too much effort was focused on showing off and justifying the company's comprehensive engineering facilities rather than on car performance, to the ultimate detriment of laptime since the cars were often overly complicated and overweight. Southgate's P153, P160 and P180 chassis were generally competitive but often unreliable – mostly, if not always, because of the engine. Besides being larger, heavier and less powerful (unless, of course, you were speaking to Louis Stanley) than Ford's Cosworth-built DFV V8, it was also considerably thirstier – to the tune of requiring up to 40 litres more fuel on board at the start of a race. Neither was it strong enough to act as a fully stressed member of the chassis, requiring a subframe.

BRM overstretched its resources on track too, frequently entering third cars, sometimes even a fourth, if a driver approached bearing enough cash. For the 1971 US GP BRM ran five cars with sufficient satisfaction (even 'fifth man' John Cannon, a CanAm regular, got to the finish in what would be

BRM P201

NOW
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A
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No.101

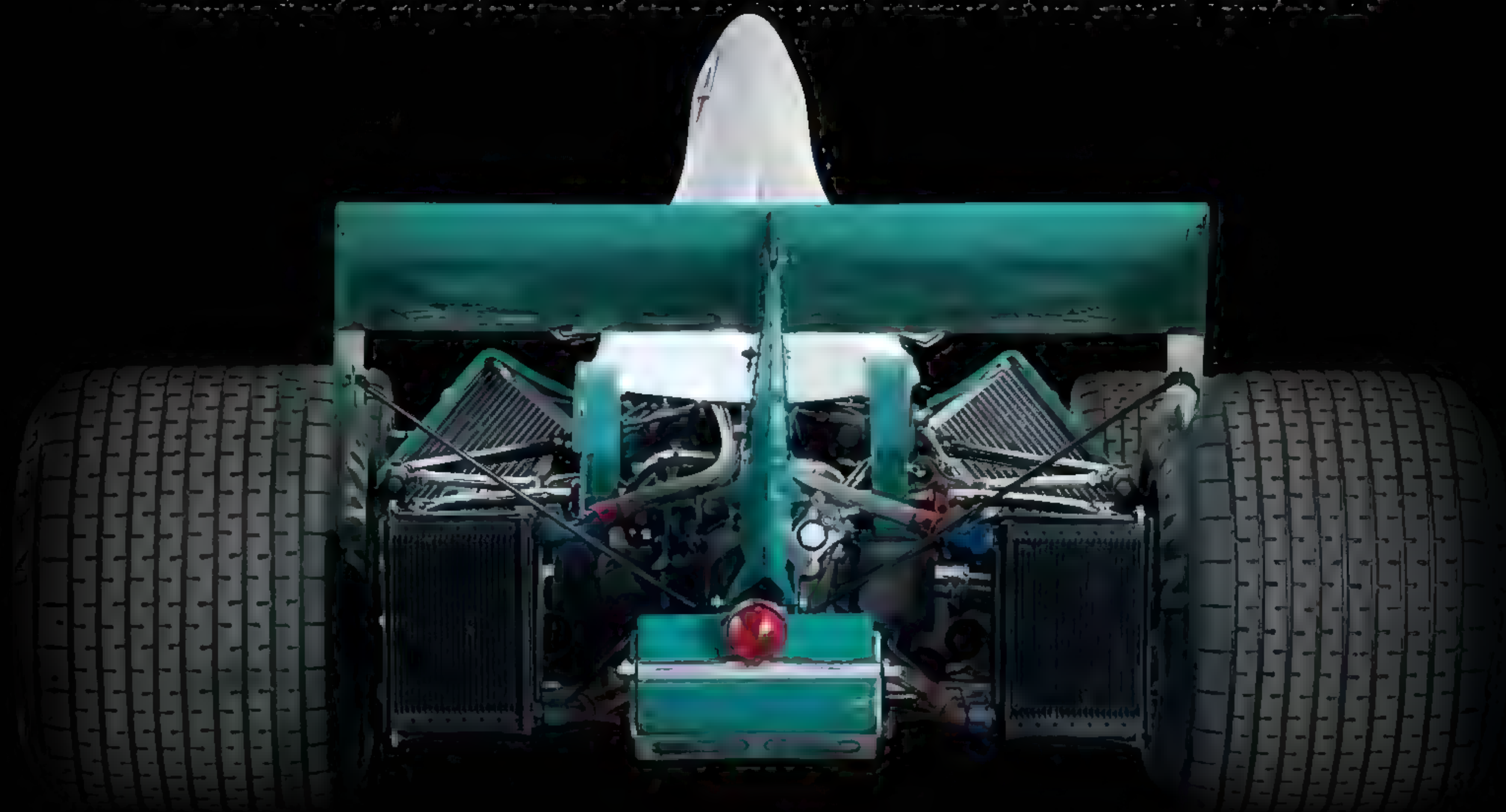
his only world championship F1 start) to try to make a habit of it. But the monies attracted were insufficient to cover the genuine operational costs; breakages were simply patched up, blown engines 'fixed' rather than replaced, leading to mounting inconsistencies in performance.

As such, rather than building to a peak as Stanley secured Marlboro sponsorship to replace Yardley, BRM continued to flounder. In 1973 Stanley signed Clay Regazzoni and Vern Schuppan to drive, but couldn't resist the cash being offered by Jean-Pierre Beltoise and Lauda (then considered an unimpressive rich-kid pay driver), and found himself committed to another multi-car effort he couldn't sustain – especially when Lauda's money ran out. If the Austrian hadn't proved so quick, and so impressive at setting up the cars, he might not have lasted until the end of the season... instead, he soldiered on through many mechanical retirements and arranged a contract with Ferrari for 1974 which proved the making of him. Beltoise secured one win, in the rain at Monaco.

Southgate having departed to join Shadow, Mike Pilbeam returned to BRM to develop the cars as well as numerous peculiar side projects including a proposed snowmobile. Pilbeam naturally gravitated towards Lauda and the two began to discuss concepts which would shape what became the all-new P201. But relationships between team, drivers and sponsor deteriorated such that Lauda, Regazzoni and Marlboro all took their leave at the end of the season.

As such the P201 wore Motul sponsorship which Stanley had poached from the F2 outfit Rondel Racing, run by Ron Dennis and Neil Trundle and aspiring to join the 1974 F1 grid with a ▶

"PILBEAM NATURALLY GRAVITATED TOWARDS LAUDA AND THE TWO BEGAN TO DISCUSS CONCEPTS WHICH WOULD SHAPE WHAT BECAME THE ALL-NEW P201"





car bankrolled by the French oil company. Henri Pescarolo – also a Motul-backed driver – joined alongside François Migault to form an all-French line-up for the majority of the season.

Besides the different livery, Pilbeam's chassis was a clear philosophical departure from Southgate's Coke-bottle shapes. Its trapezoidal hips were a nod to both weight distribution and developments in the understanding of aerodynamics; such shapes were believed to lose less downforce while the car was in yaw. Gordon Murray's Brabham BT42 had set the tone but Pilbeam, as Murray would do with the BT44, located the radiators at the side rather than in the nose, lending the P201 a slightly more bulbous appearance. In details such as its inboard front brakes the P201 followed Lotus thinking, hardly surprising since Pilbeam had worked on the genre-defining 72. A shorter wheelbase than the P201's predecessors conveyed additional agility despite the weight and bulk of the V12.

Former Coventry Climax man Peter Windsor-Smith, alongside Hassan, worked on a revised V12 with a different bore/stroke ratio, lighter pistons and new cylinder heads, but neither the car nor the engine were ready for the start of

the season. Indeed, the engine wouldn't see service until the Belgian GP at Nivelles, and the drivers preferred the old one.

Beltoise qualified a humble 11th on the P201's debut in round three, the South African Grand Prix at Kyalami. But the team made an interesting discovery: the P201 was so kind to its tyres, thanks in part to the inboard brakes not sending constant temperature spikes through the wheels, that it could probably





"THE P201 WAS SO KIND TO ITS TYRES THAT IT COULD PROBABLY HANDLE A RACE DISTANCE ON FIRESTONE'S QUALIFYING RUBBER"

handle a race distance on Firestone's qualifying rubber. Come race day Beltoise stealthed his way through the pack as others ahead tangled, shunted or had to back off to preserve tyres. With an eye on the temperature gauge (the team had cut back radiator shrouds after encountering overheating in practice), Beltoise bided his time until mid-race, picking off the works McLaren of Denny Hulme, the Tyrrells of Patrick Depailler and Jody Scheckter, then the other works-run McLarens of Emerson Fittipaldi and Mike Hailwood to move into fourth. Most impressively, given the V12's indifferent power output, Beltoise pulled off each pass without taking a slipstream from the car in front, so critical was the engine temperature.

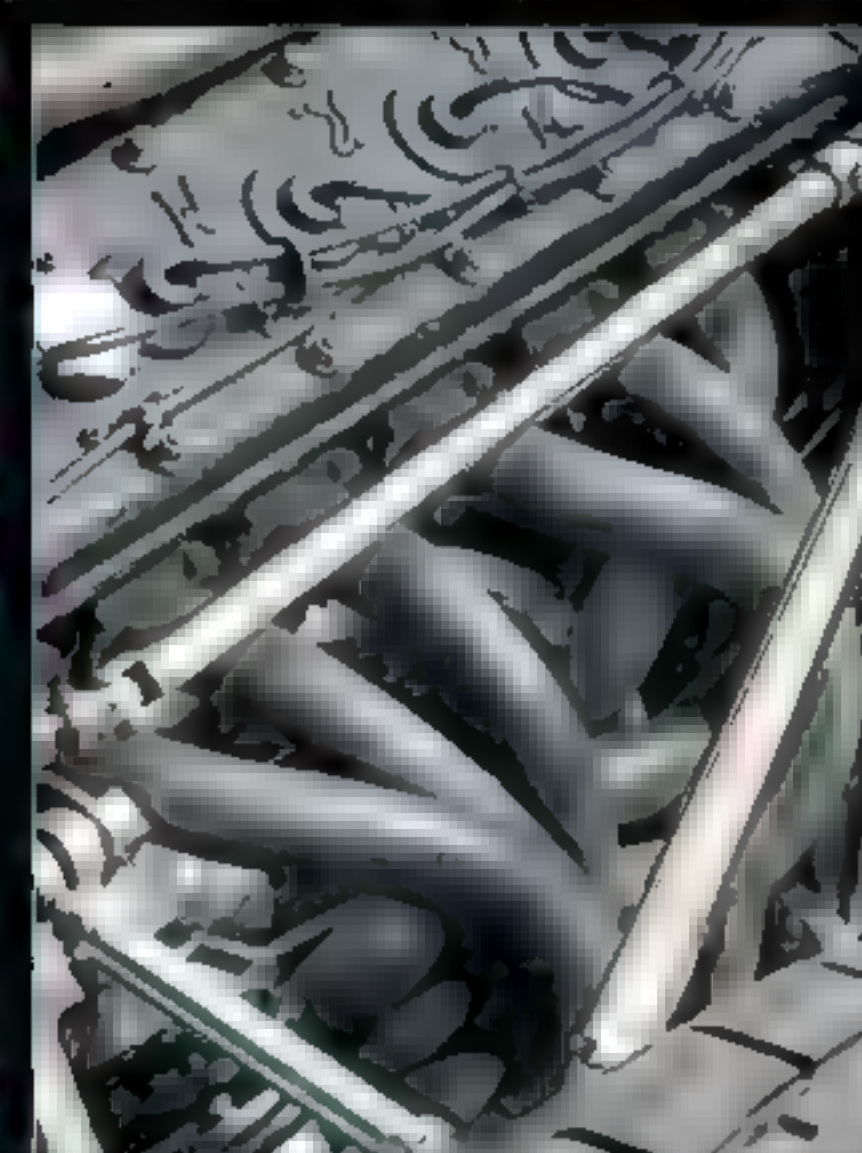
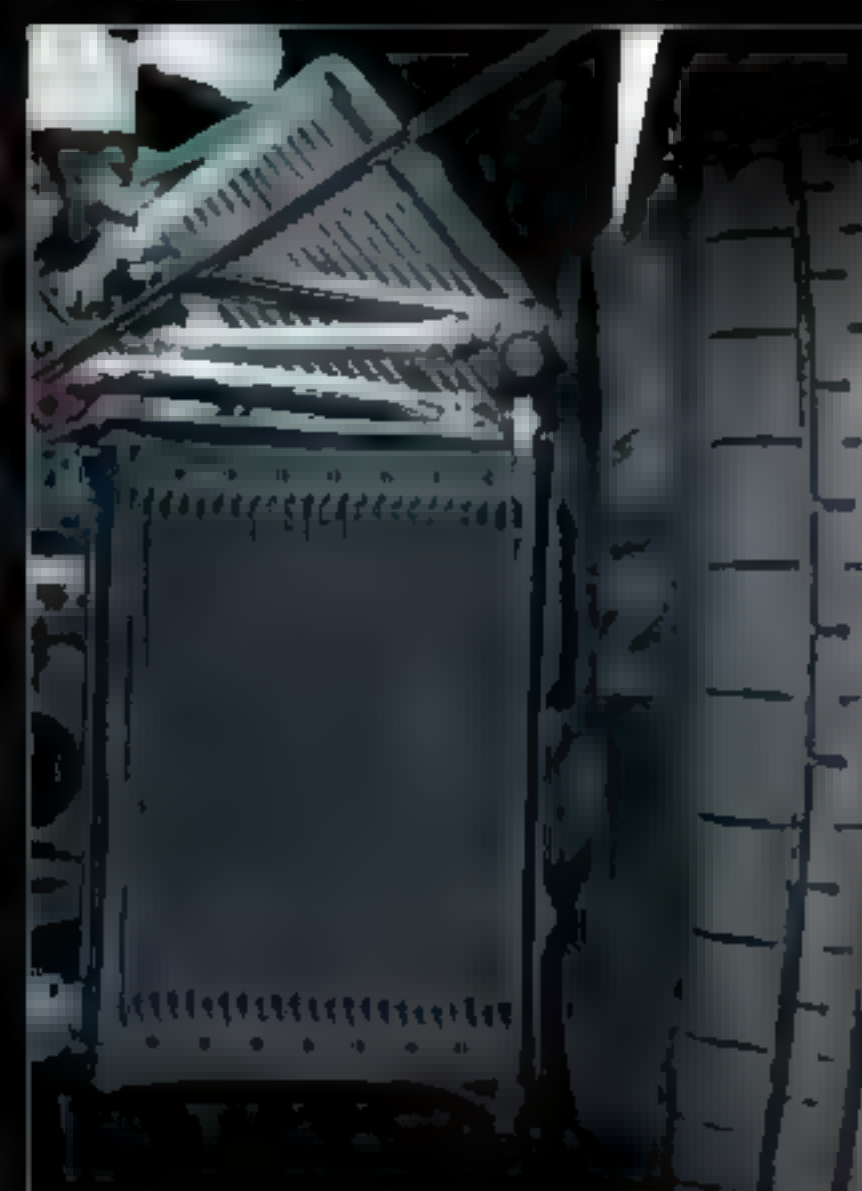
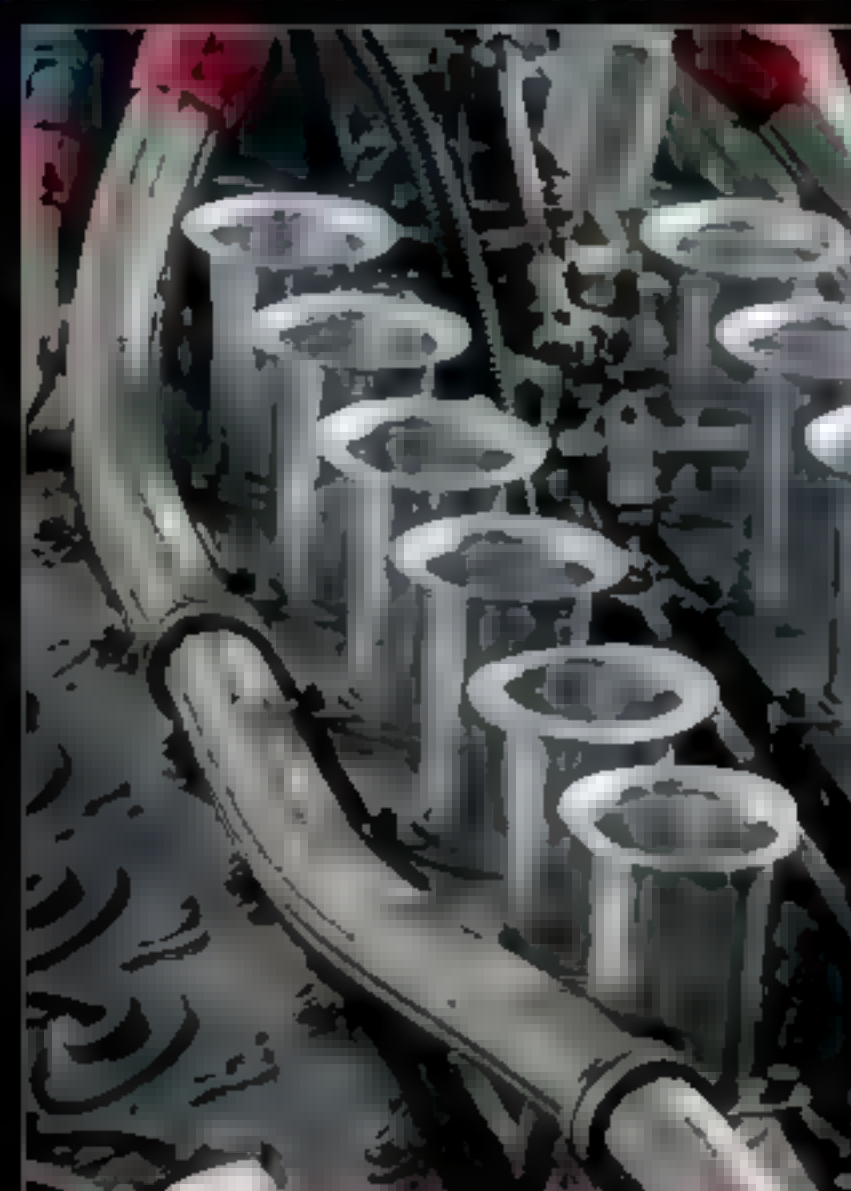
When engine problems eliminated the Ferraris of Regazzoni and Lauda, only Carlos Reutemann's BT44 lay ahead – but well ahead, an insurmountable margin. Beltoise took the flag in second place, 33.94s in arrears but three laps ahead of 15th-placed Migault and six ahead of 18th-placed Pescarolo in their elderly P160s. A puddle of water under Beltoise's P201 in the paddock bore testament to a holed radiator which would have put him out had the race lasted a few more laps.

Sadly the P201 would never deliver on the promise of this debut. Nimble but pegged back by that outdated engine, 'finger trouble' and BRM's strained finances, it registered just two more finishes in a season which went south in retirements brought on by electrical and transmission problems, and tired and repeatedly patched engines letting go. Goodyear out-developed Firestone, nullifying BRM's ability to use the softest tyres available. Thus the P201's *potential* was squandered.

BRM P201

**NOW
THAT
WAS
A
CAR**

No.101



Motul kissed off BRM at the end of the year and the Owen industrial group also pulled its backing. Stanley kept the lights on – just about – until 1977, generally with second-string drivers, and the P201 endured an inglorious end to its career when Larry Perkins pattered across the line in a three-year-old car running on 10 cylinders at the 1977 South African GP, scene of the model's rather more impressive maiden outing.

And there you have BRM in a nutshell: for all its *potential*, not always firing on all cylinders. **GP**

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STAND-INS

Plucked from the sidelines to deputise, often at short notice and for any number of reasons, such is the lot of F1's stand-in drivers...

▼ When Sergio Pérez contracted coronavirus ahead of the two races at Silverstone last year, Racing Point turned to one of the team's former drivers, Nico Hülkenberg, to replace him. The German performed admirably and also stood in for Lance Stroll at the Eifel GP later in the season



► Paul di Resta made 58 starts for Force India from 2011-2013, but was out of F1 until named reserve driver at Williams in 2016 and 2017. When Felipe Massa fell ill before qualifying for the 2017 Hungarian GP, di Resta was parachuted in, despite never having driven the car. He qualified 18th, but retired 10 laps from the end

▼ In 1982 Mario Andretti managed three substitute appearances for two separate teams in F1. The first was for Williams (below, right), after Carlos Reutemann's shock retirement, while the others were for Ferrari (below) to replace the injured Didier Pironi. In the first of those two Ferrari races, at Monza, Andretti qualified on pole...





▲ Anthony Davidson had already stepped in for Justin Wilson at Minardi in 2002 when Wilson, who was replacing the underperforming Alex Yoong, was found to be too tall for the car. In Malaysia in 2005 it was an unwell Takuma Sato that gave Davidson his third F1 start, although his BAR Honda expired after only two laps

▶ Alex Wurz had raced in F1 from 1997-2000, but then took on a role as McLaren test driver from 2001 onwards. When Juan Pablo Montoya injured his shoulder playing tennis in 2005, Wurz deputised at the second of the two races the Colombian missed, the San Marino GP. Wurz finished fourth on the road, but inherited third when Jenson Button's BAR Honda was disqualified





▲ *Martin Brundle was busy winning the World Sportscar Championship in 1988, his F1 career having stalled, when Nigel Mansell contracted chicken pox. Mansell missed the Belgian GP and Williams called up Brundle to stand in for his fellow Briton. Brundle finished a respectable seventh*

▲ *When an injured Pascal Wehrlein was unable to start the Australian and Chinese GPs for Sauber in 2017, the team drafted in Antonio Giovinazzi. Giovinazzi finished 12th in Australia, but had a disastrous time in China when he crashed in qualifying and again, at the same corner, in the race itself*

► *Giancarlo Fisichella's 2009 appearances for Ferrari were as a stand-in for the stand-in. Ferrari put Luca Badoer in Felipe Massa's car after Massa was struck by debris at the Hungarian GP. Badoer was far too slow and so Fisichella, who was driving for Force India and had nearly won at Spa, was drafted in instead*





▶ Roberto Moreno performed the F1 supersub role on a number of occasions. The first time was in 1982 when Moreno – still an F3 driver – was brought into Lotus for the Dutch GP after Nigel Mansell had broken his wrist in the previous race. Moreno failed to qualify but he reprised his supersub role for AGS (1987), Benetton (1990), Jordan (1991) and Minardi (1991)

▶ After Robert Kubica's huge shunt in Montréal in 2007, BMW Sauber turned to test driver Sebastian Vettel as his replacement for the US GP. Vettel was still only 19 at the time which, naturally, led to some good-humoured ribbing from the team, although the bib and bottle were not fitted to the car. Vettel had the last laugh as he finished seventh, which at the time made him F1's youngest-ever points scorer

▶ Marc Gené had driven for Minardi in F1 in 1999 and 2000 but, with no further drives forthcoming, settled for a role as Williams test driver from 2001 onwards. In 2003 Gené – seen here chatting with team-mate Juan Pablo Montoya – subbed for Ralf Schumacher at the Italian GP as Schumacher recovered from a concussion. Gené also deputised for Schumacher at two races the following season





▲ One of the most famous supersubs is undoubtedly Mika Salo. In 1999 the Finn stood in for Ricardo Zonta at BAR for three races, but got an even bigger gig following Michael Schumacher's leg-breaking accident at Silverstone. Salo drove six races for the Scuderia, and in Germany he finished second after he allowed team-mate and championship challenger Eddie Irvine through to win. Salo also scored a second podium at Monza

▼ This probably was the supersub to end all supersubs. A world champion – Jenson Button – steps in to replace a double world champion – Fernando Alonso – at a team – McLaren – which has won eight constructors' and 12 drivers' world championships. Alonso was off trying to win the 2017 Indy 500, which clashed with the Monaco GP, and Button was contractually obliged to do this strange one-off return to F1



▲ Eddie Cheever's time in F1 seemed to have come to an end when he found himself without a drive in 1986. But when Haas Lola needed a replacement for the injured Patrick Tambay at the Detroit GP Cheever got the call, although only after Mario Andretti turned the drive down and recommended son Michael, who was unable to get a superlicence. Cheever subsequently returned to F1 for three more seasons

► John Watson had five very successful seasons with McLaren, winning four times and finishing third in the 1982 world championship. But Watson had been out of F1 for nearly two seasons when McLaren decided to bring him back for the 1985 European GP at Brands Hatch, to stand in for Niki Lauda, who hadn't recovered from a wrist injury. Watson qualified a lowly 21st but recovered to finish seventh



▲ Norberto Fontana won the 1995 German F3 Championship, ahead of Ralf Schumacher, and landed a test role with Sauber. However, his only F1 starts came as a temporary replacement for Gianni Morbidelli on two separate occasions in 1997. The first three came after Morbidelli broke his arm in a testing accident. Fontana's final start came in the European GP following another Morbidelli testing shunt

► Fernando Alonso's massive shunt in the 2016 Australian GP forced him to miss the following race in Bahrain and McLaren opted to replace Alonso with its reserve driver, and GP2 champion, Stoffel Vandoorne. Vandoorne qualified 12th, ahead of team-mate Jenson Button, and finished 10th, scoring his first F1 point. Vandoorne replaced Button in the team for 2017



2022 WITNESS THE NEW ERA LIVE

The hype is peaking, and the wait is almost over. But why is 2022 set to be a huge year for the pinnacle of motorsport, and why should you be there to witness it? Here are the three key reasons to get back to races in 2022.



Lewis Hamilton
Barcelona Grand Prix 2021

NEW CARS

It's been a long time since the F1 car has evolved and after its biggest regulation shake-up in a generation, really, we're overdue. Designed to return fans to a more dynamic and exciting race, driving the new Formula 1 car will be a more exhilarating experience in 2022.

Key changes have been made to stabilise the chassis, alter machines and reduce the amount of dirty air that affects the trailing car. What's more, the new car will be unveiled at the first race of the season in Melbourne.

However, the Spanish Grand Prix at Barcelona is set to be the first 'showstopper' event, as the new cars will be seen in action for the first time. The new design is a massive step forward, and it's all about making the sport more exciting for other teams.

Testing venue not confirmed for 2022

NEW CIRCUITS

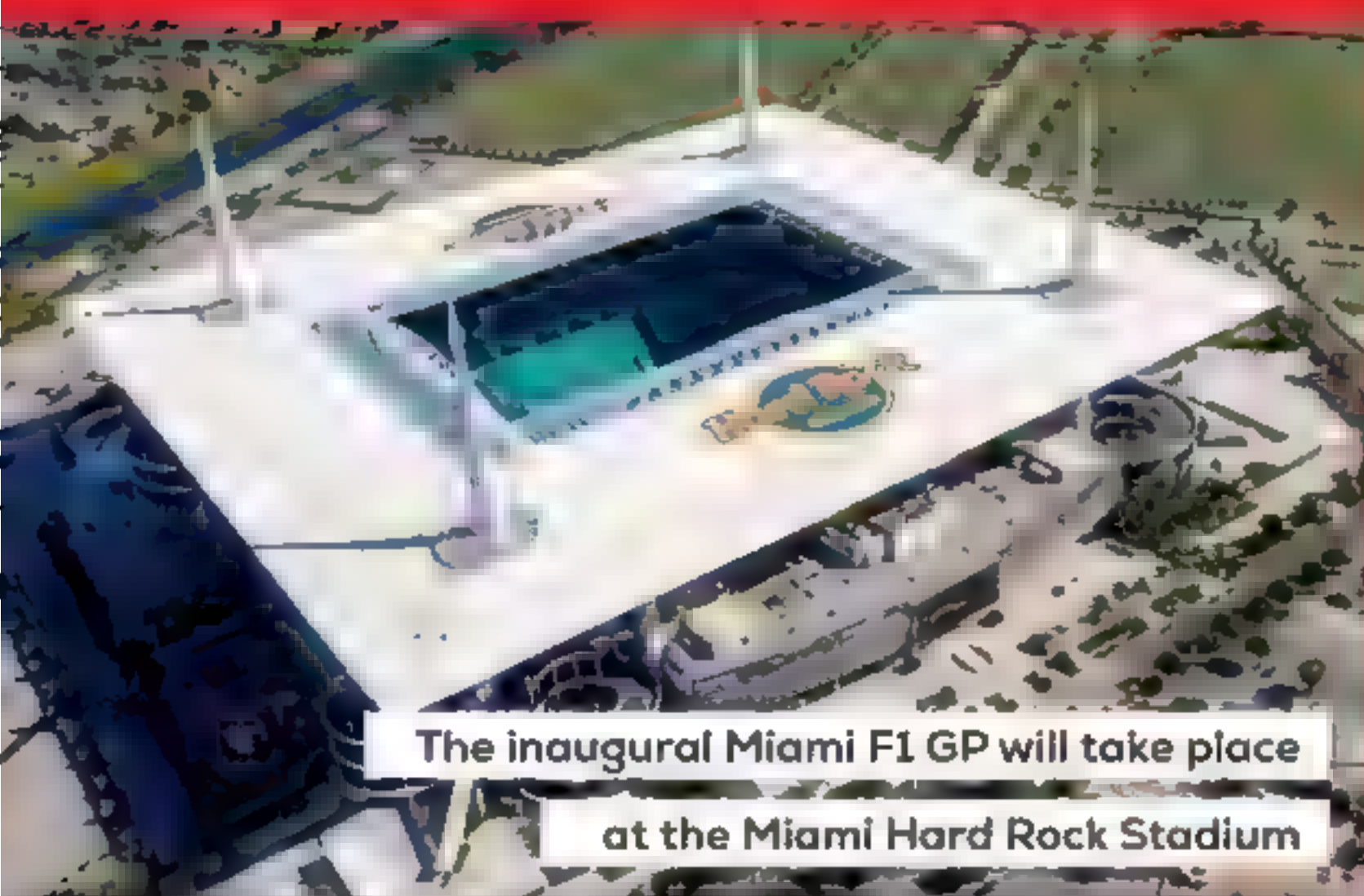
Not only will the teams and drivers have new cars to get used to, but they'll also be using brand new tracks. The first of these is the Miami Grand Prix, which will see Formula 1 return to Florida for the first time since 1959. It's a new track, a new venue, and a new challenge for the drivers. The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams.

The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams. The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams. The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams.



New for the 2022 season

The new Formula 1 car has a futuristic iridescent shine



The inaugural Miami F1 GP will take place
at the Miami Hard Rock Stadium


NEW EXPERIENCES

The F1 season will be finally seen, and it's all about making the sport more exciting for other teams. The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams. The new track is a challenge for the drivers, and it's all about making the sport more exciting for other teams.

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A full-page advertisement for Motorsport Tickets. The background features a close-up of a Formula 1 driver wearing a red racing suit and helmet, sitting in the cockpit of a black and green car. In the background, a large crowd of spectators is visible under a bright sky.

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A circular logo with a red border. Inside, there's a white circle with the text "COVID SECURE BOOKING". Around this central circle are four smaller circles containing the words "COVID PROMISE", "COVID PROTECTION GUARANTEE", "BOOKING PROTECTION", and another "COVID PROMISE". Arrows connect these outer circles in a clockwise direction.

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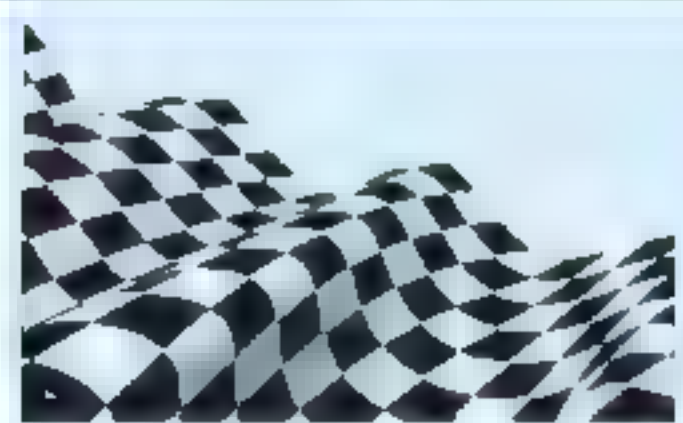
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FINISHING STRAIGHT | F1 WORLD CHAMPIONSHIP ROUND 9

RACE DEBRIEF

THE AUSTRIAN GP IN 3 KEY MOMENTS



Another podium for Norris but this time Lando was disappointed that it was only third

PICTURES: CHARLIE COATES, ANDY HONE, MARK SUTTON, ZAK MAJGER, JERRY ANDRE

1 Norris lays down a marker for resurgent McLaren

Lando Norris was genuinely disappointed to finish only third in the Austrian Grand Prix, which shows how far McLaren has come recently, and how brilliantly Norris is driving.

There's a convincing argument to say Lando's been Formula 1's best driver so far in 2021. He's obliterating a highly-rated team-mate, making few mistakes worth mentioning, and often achieving results considered beyond McLaren's reach.

This was Lando's third podium finish of the season already, and it was the best simply because it owed nothing to faster cars retiring.

Although Norris barely troubled the top 10 in practice, come qualifying he hit form: second in Q1, fifth in Q2 – on the more durable medium compound tyre – and within half a tenth of nicking pole from Max Verstappen in Q3.

"I did a 1.04.7, he did a 1.03.7 on a... it's just... I don't... obviously I congratulate him," said Daniel Ricciardo, after qualifying 13th in the sister McLaren, "but I don't know how to get that laptime."

Norris put it down to set-up tweaks and taking risks, particularly in the high-speed corners. They paid off handsomely, and although Norris predictably couldn't live with Verstappen's Red Bull in the race (who could?), Lando drove quickly enough to repel Lewis Hamilton's Mercedes for 20 laps, leading the seven times world champion to remark, "such a great driver, Lando".

But it was Valtteri Bottas who finished second, after Hamilton damaged his car on kerbs and fell further off the pace. Norris finished within 2.1s of second, which is why he was so disappointed.

Bottas moved ahead at the pitstops, after Norris served a 5s penalty for edging Sergio Pérez's Red Bull towards the gravel trap at Turn 4 as Pérez tried to drive around the McLaren's outside. The letter of the law was applied, but it seemed particularly rough justice considering Pérez only achieved striking distance by going completely off the circuit at Turn 1 after the restart.

Even Christian Horner didn't agree with the

decision: "Otherwise, you're going to get drivers just chucking themselves off the circuit and claiming penalties. For me, that's hard racing."

Lacking any sense of irony, Pérez copped 10s himself for similar behaviour towards Charles Leclerc's Ferrari, dropping Pérez behind Carlos Sainz in the results.

Hamilton's aero damage forced him into a second pitstop as his tyres gave out, leaving Norris in the clear after re-passing Hamilton with 19 laps to run. Bottas made it to the end without stopping again, but felt the heat from Norris.

"McLaren made a good step," said Bottas. "They were definitely putting some pressure to us in the end. It was quite surprising considering there was quite a few tenths of pace difference last week."

McLaren team boss Andreas Seidl remains realistic. McLaren's low-drag car is unlikely to be so competitive everywhere from now on. But with Norris – who finished 40s ahead of Ricciardo – in the cockpit, anything seems possible.



It went from bad to worse for Mercedes at the Austrian GP as it struggled to be even second best to Red Bull

2 Mercedes regresses further vs Red Bull

After humbling Mercedes at the previous weekend's Styrian GP on the same circuit, Max Verstappen's victory in the Austrian GP was even more straightforward. He was unhappy about doing his final Q3 run with no tow, but still took pole, led from start to finish and set fastest lap.

Several days of number-crunching between races, softer tyre compounds thrown in, Lewis Hamilton even flying back to Brackley for simulator sessions (which he usually hates doing), yet still Mercedes was well off the pace – and not even really second best, thanks to Norris.

Hamilton only qualified fourth. Both he and Valtteri Bottas felt Mercedes lost an extra tenth to Red Bull compared with the previous week, and engineering director Andrew Shovlin confirmed Mercedes lost performance on the soft tyre as conditions grew hotter from Friday (when Mercedes was 1-2). Hamilton would still likely have finished second had he not damaged his car mid-race.

"I think it was around lap 30, out of Turn 10, where there's a pretty aggressive kerb," said team boss Toto Wolff. "We didn't see a driving mistake. It was pretty much the load that accrued, and we need to analyse why that was. We calculated we

lost about 30 points [of downforce]."

Mercedes has its final 2021 upgrade planned for Silverstone, which will be crucial to arresting Red Bull's momentum. This was Verstappen's third win in a row – and it would have been five on the bounce but for the Baku tyre failure...

"Praying for a different scenario in the next race, but you look at their car it's just on rails," was Hamilton's take. "We're miles away from them. So we've got a lot of work to do. We need all hands on deck, find as much performance as possible."

3 Russell almost makes his point

George Russell qualified Williams inside the top 10 for the first time since the 2018 Italian GP – even managing to do so on the strategically advantageous medium compound tyre – but again missed the points after a difficult race.

A fresh power unit banished the unreliability of the previous weekend, but Russell's race began badly as he dropped behind several cars on the first lap after slamming on the anchors to avoid a crash with Yuki Tsunoda's AlphaTauri. Russell got back into points contention thanks to Williams' one-stop strategy, but lost 10th to Fernando Alonso's Alpine with less than five laps to run.

"We did a great job over one lap, but they were inherently that bit faster than us and were always going to come through," Russell reflected. "It's very promising, and we're making some good progress."

Russell made it into the top 10 in qualifying but once again just missed out on a point



RESULTS ROUND 9

RED BULL RING / 4.7.21 / 71 LAPS



1st	Max Verstappen Red Bull	1h23m54.543s
2nd	Valtteri Bottas Mercedes	+17.973s
3rd	Lando Norris McLaren	+20.019s
4th	Lewis Hamilton Mercedes	+46.452s
5th	Carlos Sainz Ferrari	+57.144s
6th	Sergio Pérez Red Bull	+57.915s*
7th	Daniel Ricciardo McLaren	+60.395s
8th	Charles Leclerc Ferrari	+61.195s
9th	Pierre Gasly AlphaTauri	+61.844s
10th	Fernando Alonso Alpine	+1 lap
11th	George Russell Williams	+1 lap
12th	Yuki Tsunoda AlphaTauri	+1 lap**
13th	Lance Stroll Aston Martin	+1 lap***
14th	Antonio Giovinazzi Alfa Romeo	+1 lap
15th	Kimi Räikkönen Alfa Romeo	+1 lap****
16th	Nicholas Latifi Williams	+1 lap*****
17th	Sebastian Vettel Aston Martin	+2 laps - crash
18th	Mick Schumacher Haas	+2 laps
19th	Nikita Mazepin Haas	+2 laps*****

Retirements

Esteban Ocon Alpine 0 laps - collision

Fastest lap

Max Verstappen: 1m06.200s on lap 62

TYRE COMPOUNDS USED



CLIMATE

Sunny

AIR TEMP

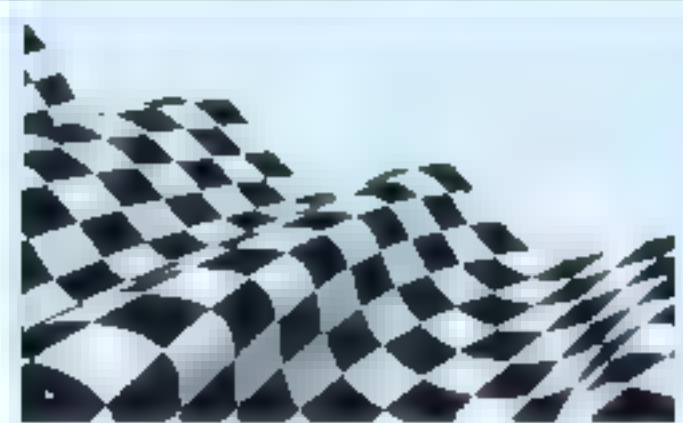
24°C

TRACK TEMP

32°C

DRIVERS' STANDINGS

1 Verstappen 182pts	11 Alonso 20pts
2 Hamilton 150pts	12 Stroll 14pts
3 Pérez 104pts	13 Ocon 12pts
4 Norris 101pts	14 Tsunoda 9pts
5 Bottas 92pts	15 Räikkönen 1pt
6 Leclerc 62pts	16 Giovinazzi 1pt
7 Sainz 60pts	17 Russell 0pts
8 Ricciardo 40pts	18 Schumacher 0pts
9 Gasly 39pts	19 Mazepin 0pts
10 Vettel 30pts	20 Latifi 0pts



FINISHING STRAIGHT | F1 WORLD CHAMPIONSHIP ROUND 10

RACE DEBRIEF

THE BRITISH GP IN 3 KEY MOMENTS



Lewis Hamilton's eighth British GP win will always be remembered for the first-lap controversy

PICTURE: CHARLES COATE S. ANDY HONE MARK SUTTON, JAKOB EBBEY FIA POC.

1 Hamilton's win overshadowed by Verstappen shunt

While the peak-end rule means the 2021 British Grand Prix will be remembered as a thriller – even if much of it was a tyre-management slog before Lewis Hamilton's crucial pass for the lead on the antepenultimate lap – the result remains mired in controversy owing to the collision between Hamilton and Max Verstappen on lap one.

Later the world champion, who was also subjected to racial abuse on social media in the aftermath, aptly summed up the state of affairs by speaking of the need for he and his title rival to restore "respect" in their on-track conduct.

The chain of events which ended with Verstappen making a 51G impact with the tyre barrier at Copse began on Friday afternoon when Max was beaten to 'pole' by Hamilton. Verstappen reversed that state of affairs in Saturday's trial 'Sprint Qualifying' race, surging into the lead from the start as Lewis bogged down with wheelspin. This 'win' conferred three points and pole position

for the GP, from where Verstappen defended with typical aggression as Hamilton made a much better start than he had the previous afternoon.

It was clear the stakes were high: Hamilton was desperate to succeed in front of his home crowd, Verstappen equally desperate not to let the low-downforce Mercedes get its nose ahead on this high-speed circuit. The two banged wheels at Abbey, and again on the Wellington Straight as Hamilton benefitted from a better exit from Village to get alongside.

The Mercedes was actually ahead at the entry to Brooklands, but Verstappen had the inside line and reclaimed the lead into Luffield. On the former pit straight Hamilton again looked for a way past, and again Verstappen jinked left-right-left to deny him, prompting Hamilton – nearly brushing the old pitwall – to send one up the inside into Copse. Verstappen turned in and that was it: Hamilton's left-front met the Red Bull's right rear, and the

race was neutralised then red-flagged.

Immediately the respective team managers began lobbying race director Michael Masi on the radio, but the matter was in the hands of the stewards – who ultimately decided Hamilton was to blame for the accident, since he could have done more to avoid it. "Car 44 [Hamilton] was on a line that did not reach the apex of the corner, with room available to the inside," said the stewards' finding. "When Car 33 [Verstappen] turned in to the corner, Car 44 did not avoid contact."

The penalty – 10 seconds, which Hamilton observed at his only pitstop – is the second lowest on the tariff, which provoked further controversy. Reading between the lines, the mildness of the sanction might just suggest the stewards felt the burden of responsibility was close to 50/50. Certainly, there was almost unprecedented aggression from both parties in the run-up to the shunt – and it is tellingly rare for Hamilton to get



Fernando Alonso aced Sprint Qualifying. The Spaniard gained six places on the opening lap and finished the event seventh, an improvement of four places on his qualifying performance

his elbows out in such a fashion. His comments after the race indicated an awareness that both of them crossed a line of acceptability

2 Leclerc seizes the moment

In 1951 José Froilán González claimed Ferrari's first world championship victory at Silverstone against the odds. 70 years later, perhaps galvanised by a demonstration run in a period 3/5 race car, Charles Leclerc came close to emulating that feat, leading every lap bar three.

In non-qualifying-qualifying on Friday he squeezed every drop of performance out of his SF21 to be fourth on the grid for Saturday's sprint-qualifying-not-a-race-race, maintaining that place for Sunday's main event. By contrast, team-mate Carlos Sainz fluffed Q3 and ended up behind the eighth-placed Williams of George Russell, dropping to 18th when they collided at Brooklands on the opening lap of the sprint, giving himself a lot to do

Leclerc nearly pulled off the surprise of the season so far but had to settle for second



Leclerc then mugged Valtteri Bottas at the start of the grand prix and inherited the lead as Hamilton lost momentum during his clash with Verstappen. When the race restarted Leclerc aced it from 'pole' and kept Lewis at bay during the opening stint despite an intermittent engine glitch, then got some breathing room courtesy of Hamilton's penalty, since Bottas – struggling in the heat with a non-functional drinks bottle – was barely a speck in his mirrors

Hamilton emerged from the pits in fifth and made short work of Lando Norris. The McLaren driver was already in extreme tyre-management mode after having to fight his way past Fernando Alonso's Alpine following a slow pitstop. Bottas was ordered not to put up a fight and Hamilton duly edged into DRS range of Leclerc on lap 49 of the 52. Next time around Lewis caught the Ferrari at – of all places – Copse, this time taking the inside line cleanly as Leclerc speared wide

3 Veterans shine in Sprint Qualifying

While the jury remains out on the sprint format (see Insider), the event provided two of F1's veteran drivers with an opportunity to deploy their experience to move up the grid. Gambling on soft tyres, Fernando Alonso and Kimi Räikkönen catapulted forwards on the opening lap of the sprint – Alonso made up six places, Räikkönen four

While it's easy to put this down to a grip advantage, study of the onboards reveals some masterly ducking and diving – particularly from Alonso, who briefly made it up to fifth ahead of the two McLarens

Räikkönen, who went from 17th to 13th, might have moved even further forwards but for some damage-inducing contact with Lance Stroll's Aston Martin at Becketts. Alonso couldn't hold the McLarens off but seventh place on the grand prix grid was still a fine outcome

RESULTS ROUND 10

SILVERSTONE / 18.7.21 / 52 LAPS



1st	Lewis Hamilton Mercedes	1h58m23.284s
2nd	Charles Leclerc Ferrari	+38.71s
3rd	Valtteri Bottas Mercedes	+11.125s
4th	Lando Norris McLaren	+28.573s
5th	Daniel Ricciardo McLaren	+42.624s
6th	Carlos Sainz Ferrari	+43.454s
7th	Fernando Alonso Alpine	+72.093s
8th	Lance Stroll Aston Martin	+74.289s
9th	Esteban Ocon Alpine	+76.162s
10th	Yuki Tsunoda AlphaTauri	+82.065s
11th	Pierre Gasly AlphaTauri	+85.327s
12th	George Russell Williams	+1 lap
13th	Antonio Giovinazzi Alfa Romeo	+1 lap
14th	Nicholas Latifi Williams	+1 lap
15th	Kimi Räikkönen Alfa Romeo	+1 lap
16th	Sergio Pérez Red Bull	+1 lap
17th	Nikita Mazepin Haas	+1 lap
18th	Mick Schumacher Haas	+1 lap

Retirements

Sebastian Vettel Aston Martin	40 laps - engine
Max Verstappen Red Bull	0 laps - accident

Fastest lap

Sergio Pérez: 1m28.617s on lap 50

Sprint Qualifying - 17 laps

1st Verstappen 2nd Hamilton 3rd Bottas

TYRE COMPOUNDS USED



CLIMATE

Sunny

AIR TEMP

32°C

TRACK TEMP

49°C

DRIVERS' STANDINGS

1 Verstappen	185pts	11 Alonso	26pts
2 Hamilton	177pts	12 Stroll	18pts
3 Norris	113pts	13 Ocon	14pts
4 Bottas	108pts	14 Tsunoda	10pts
5 Pérez	104pts	15 Räikkönen	1pt
6 Leclerc	80pts	16 Giovinazzi	1pt
7 Sainz	68pts	17 Russell	0pts
8 Ricciardo	50pts	18 Schumacher	0pts
9 Gasly	39pts	19 Latifi	0pts
10 Vettel	30pts	20 Mazepin	0pts



[illegible]**Price** £45

porterpress.co.uk

In late 1961 a group of employees including engineers Carlo Chiti and Giotto Bizzarrini walked out to form their own team – with the backing of

Scuderia Serenissima owner Count Giovanni Volpi di Misurata, one of Enzo's best customers. Raging, Ferrari cancelled Volpi's order of a pair of 250 GTOs. The Count responded by having Bizzarrini convert a Scuderia Serenissima 250 GT into something which could beat the GTO on track. Richard Heseltine's book chronicles the history of this extraordinary one-off car, from its origins to its period competition career and its subsequent life in historic racing.

[illegible]

2000-2001-2002-2003-2004-2005-2006-2007-2008-2009-2010-2011-2012-2013-2014-2015-2016-2017-2018-2019-2020-2021-2022-2023-2024-2025-2026-2027-2028-2029-2030-2031-2032-2033-2034-2035-2036-2037-2038-2039-2040-2041-2042-2043-2044-2045-2046-2047-2048-2049-2050-2051-2052-2053-2054-2055-2056-2057-2058-2059-2060-2061-2062-2063-2064-2065-2066-2067-2068-2069-2070-2071-2072-2073-2074-2075-2076-2077-2078-2079-2080-2081-2082-2083-2084-2085-2086-2087-2088-2089-2090-2091-2092-2093-2094-2095-2096-2097-2098-2099-2100-2101-2102-2103-2104-2105-2106-2107-2108-2109-2110-2111-2112-2113-2114-2115-2116-2117-2118-2119-2120-2121-2122-2123-2124-2125-2126-2127-2128-2129-2130-2131-2132-2133-2134-2135-2136-2137-2138-2139-2140-2141-2142-2143-2144-2145-2146-2147-2148-2149-2150-2151-2152-2153-2154-2155-2156-2157-2158-2159-2160-2161-2162-2163-2164-2165-2166-2167-2168-2169-2170-2171-2172-2173-2174-2175-2176-2177-2178-2179-2180-2181-2182-2183-2184-2185-2186-2187-2188-2189-2190-2191-2192-2193-2194-2195-2196-2197-2198-2199-2200-2201-2202-2203-2204-2205-2206-2207-2208-2209-2210-2211-2212-2213-2214-2215-2216-2217-2218-2219-2220-2221-2222-2223-2224-2225-2226-2227-2228-2229-2230-2231-2232-2233-2234-2235-2236-2237-2238-2239-2240-2241-2242-2243-2244-2245-2246-2247-2248-2249-2250-2251-2252-2253-2254-2255-2256-2257-2258-2259-2260-2261-2262-2263-2264-2265-2266-2267-2268-2269-2270-2271-2272-2273-2274-2275-2276-2277-2278-2279-2280-2281-2282-2283-2284-2285-2286-2287-2288-2289-2290-2291-2292-2293-2294-2295-2296-2297-2298-2299-2300-2301-2302-2303-2304-2305-2306-2307-2308-2309-2310-2311-2312-2313-2314-2315-2316-2317-2318-2319-2320-2321-2322-2323-2324-2325-2326-2327-2328-2329-2330-2331-2332-2333-2334-2335-2336-2337-2338-2339-2340-2341-2342-2343-2344-2345-2346-2347-2348-2349-2350-2351-2352-2353-2354-2355-2356-2357-2358-2359-2360-2361-2362-2363-2364-2365-2366-2367-2368-2369-2370-2371-2372-2373-2374-2375-2376-2377-2378-2379-2380-2381-2382-2383-2384-2385-2386-2387-2388-2389-2390-2391-2392-2393-2394-2395-2396-2397-2398-2399-2400-2401-2402-2403-2404-2405-2406-2407-2408-2409-2410-2411-2412-2413-2414-2415-2416-2417-2418-2419-2420-2421-2422-2423-2424-2425-2426-2427-2428-2429-2430-2431-2432-2433-2434-2435-2436-2437-2438-2439-2440-2441-2442-2443-2444-2445-2446-2447-2448-2449-2450-2451-2452-2453-2454-2455-2456-2457-2458-2459-2460-2461-2462-2463-2464-2465-2466-2467-2468-2469-2470-2471-2472-2473-2474-2475-2476-2477-2478-2479-2480-2481-2482-2483-2484-2485-2486-2487-2488-2489-2490-2491-2492-2493-2494-2495-2496-2497-2498-2499-2500-2501-2502-2503-2504-2505-2506-2507-2508-2509-2510-2511-2512-2513-2514-2515-2516-2517-2518-2519-2520-2521-2522-2523-2524-2525-2526-2527-2528-2529-2530-2531-2532-2533-2534-2535-2536-2537-2538-2539-2540-2541-2542-2543-2544-2545-2546-2547-2548-2549-2550-2551-2552-2553-2554-2555-2556-2557-2558-2559-2560-2561-2562-2563-2564-2565-2566-2567-2568-2569-2570-2571-2572-2573-2574-2575-2576-2577-2578-2579-2580-2581-2582-2583-2584-2585-2586-2587-2588-2589-2590-2591-2592-2593-2594-2595-2596-2597-2598-2599-2600-2601-2602-2603-2604-2605-2606-2607-2608-2609-2610-2611-2612-2613-2614-2615-2616-2617-2618-2619-2620-2621-2622-2623-2624-2625-2626-2627-2628-2629-2630-2631-2632-2633-2634-2635-2636-2637-2638-2639-2640-2641-2642-2643-2644-2645-2646-2647-2648-2649-2650-2651-2652-2653-2654-2655-2656-2657-2658-2659-2660-2661-2662-2663-2664-2665-2666-2667-2668-2669-2670-2671-2672-2673-2674-2675-2676-2677-2678-2679-2680-2681-2682-2683-2684-2685-2686-2687-2688-2689-2690-2691-2692-2693-2694-2695-2696-2697-2698-2699-2700-2701-2702-2703-2704-2705-2706-2707-2708-2709-2710-2711-2712-2713-2714-2715-2716-2717-2718-2719-2720-2721-2722-2723-2724-2725-2726-2727-2728-2729-2730-2731-2732-2733-2734-2735-2736-2737-2738-2739-2740-2741-2742-2743-2744-2745-2746-2747-2748-2749-2750-2751-2752-2753-2754-2755-2756-2757-2758-2759-2760-2761-2762-2763-2764-2765-2766-2767-2768-2769-2770-2771-2772-2773-2774-2775-2776-2777-2778-2779-2780-2781-2782-2783-2784-2785-2786-2787-2788-2789-2790-2791-2792-2793-2794-2795-2796-2797-2798-2799-2800-2801-2802-2803-2804-2805-2806-2807-2808-2809-2810-2811-2812-2813-2814-2815-2816-2817-2

[illegible]

F-test results indicate that the null hypothesis cannot be rejected at the conventional levels of significance. The regression model is statistically significant.

[illegible]

A few weeks later, during a holiday, the *Compass* lost the point and hit a big bank—paid its debts and was very badly damaged and its owner, John Anderson, was in a poor way. I don't get a full story of what happened, but I do know that the *Compass* was on its way out and that it was a big job to find it. One of the first things I did was to go to the bank and find out what was going on. I was very lucky to find it. I was very lucky to find it. I was very lucky to find it.



41. **Answer: D** The author argues from the past to the future to make his prediction. The author's conclusion is that the world will be a more peaceful place in 2025. He makes this claim by pointing out that the world has been a more peaceful place in the past. He also points out that the world is becoming more peaceful now. He concludes that the world will be a more peaceful place in 2025.

[illegible]

Under the plan there were large differences in participation rates by the various income groups; at least 60 percent of the \$8-14 T was men, 71 percent have had higher end work.





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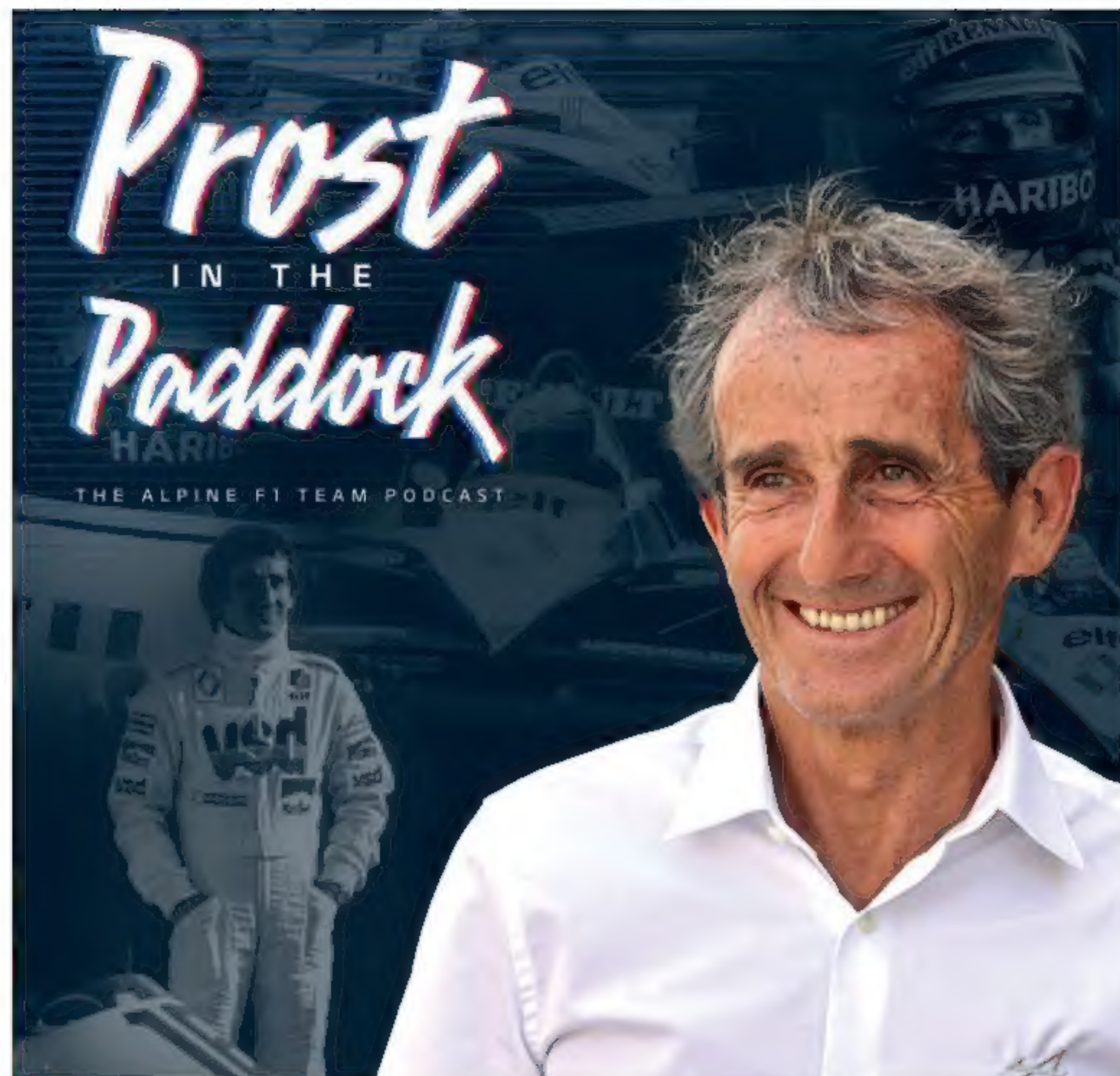


Mercedes-AMG and its longtime partner IWC Schaffhausen have launched the latest in a series of tie-in timepieces, based on the Swiss watchmaker's Pilot's Watch Chronograph architecture.

A 43mm scratch-resistant titanium case coloured to match Mercedes-AMG's signature Selenite Grey Magno shade encloses an IWC calibre 69385 movement. The

dial features a motorsport-inspired carbonfibre weave finish below an anti-reflective sapphire crystal face, with silver chronograph sub-dials styled to look like a racecar dashboard.

The Mercedes-AMG logo is etched on the back of the watch, while the strap is embossed black calf skin with contrasting stitching and a folding clasp.



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Four-time world champion Alain Prost shares his memories – and some never-heard-before insights – over the course of a four-episode podcast series produced by the Alpine F1 team, of which he is a director. In the first episode, published on 14 July, Prost explains how a visit to a kart race in which his brother was competing turned his head towards motorsport – until that point Prost's dream was to become a footballer. From that point he set his remarkable

willpower towards a career in racing, working obsessively to perfect his craft. Such dedication would reward him with an F1 debut at the age of 24 (young by the standards of the time).

The podcast is available via the Alpine team's social media feeds as well as prominent podcast platforms such as Apple Music, Spotify, Deezer, Google Podcast and Amazon Music. The subsequent episodes will be published on 15 September, 13 October and 10 November.

MOSLEY: IT'S COMPLICATED

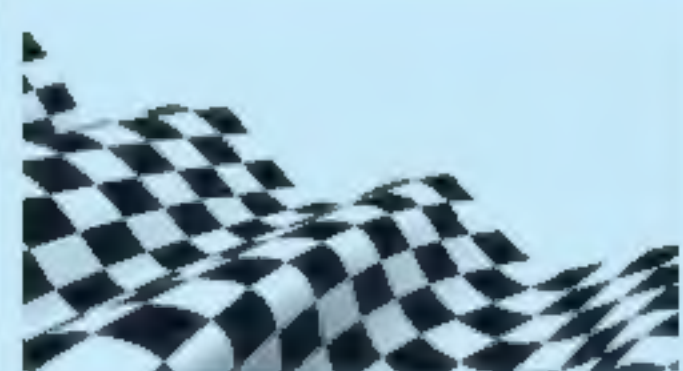
Price £9.99 (streaming)

Few characters related to the world of motor racing are as polarising as the late Max Mosley. "Complicated" is something of an understatement; "I'm very glad he's my friend and not my enemy" says the actor Hugh Grant, who aligned with Mosley in battle against the press over privacy issues. Enmities between Mosley and those with whom he locked horns certainly ran deep; this biopic was described as "a self-congratulatory, syrupy panegyric" in a snotty review by *The Times*, whose parent company Mosley successfully sued. Rupert Murdoch appears unwilling to let that lie...

Structured around interviews with the former FIA president, this film proceeds more along the lines

of an authorised biography than an excoriating exposé. But if you can approach the material without being triggered by this approach there is much of interest in it. Love him or loathe him, Mosley remains a fascinating and important figure in motorsport history.





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TOO EARLY TO CLAIM SPRINT SUCCESS

Call it what you like (after all, even the people who came up with the idea can't seem to get its name right every time), but Sprint Qualifying – officially 'the F1 Sprint' – could become a fixture of F1 weekends if further trials prove successful.

Indeed, based on its first outing at Silverstone, the auguries are that it will be declared the greatest innovation since the disc brake regardless of whether it's any good or not; F1's website presented a gloriously Pravda-esque compilation of team and driver quotes after the event in which you would struggle to find a crumb of negativity.

All this despite prominent drivers, including Max Verstappen and Sebastian Vettel, saying it shouldn't be used to determine pole position... which was kind of the point of introducing it.

"I think that's wrong," says Vettel. "I think they should change that. It doesn't make sense. It's a new discipline, so award a new stat for it."

As the professional hair-splitters who populate the Internet will be happy to mansplain to you,

pole position is actually determined – or at the very least ratified – by the FIA when it publishes the official starting grid on a Sunday morning. Parking this egregious slab of pedantry for a moment, there is a general consensus among purists that pole position should belong to the driver who is fastest over a single lap.

It's a matter of precedent, since the system of determining grids by lottery was abandoned, that pole is a reward for putting everything on the line to set the quickest lap time. Determining it via a race dilutes this measure of a driver's greatness – Exhibit A being Lewis Hamilton's performance in non-qualifying-qualifying on Friday, when he went

Fans at Silverstone on Saturday at least had a 'race' to enjoy, even if it didn't throw up many surprises...



fastest of all despite not having the quickest car.

Interviewed on TV post-'Sprint', Ross Brawn uttered some peculiar and nonsensical homily to the effect that if the 'Sprint' had been the grand prix, Lewis would have lost, and now he had another chance to win the race. Not a hugely convincing argument in favour of the concept. Pressed gently, he emitted this line again with all the conviction of a ticket clicking out of a slot machine. A less supine interviewer might have pointed out to Ross that twaddle doesn't transmute into fact through some special alchemy via repetition. Or, indeed, that if their grandmother had wheels, she'd be a wagon.

The 'Sprint' itself was intriguing but considerably more data is required before we can enshrine it as a success. Positives included an exciting opening lap in which the battle between Hamilton and

Max Verstappen brought the crowd to its feet (as indeed it would again the following afternoon), and Fernando Alonso sliced through the field with exquisite daring and skill. In the debrief Brawn *et al* would no doubt have taken Sergio Pérez's daft spin – thus ensuring one of the fastest cars started last on Sunday – as an easy win for the Sprint concept.

In the demerit column we have to weigh the absence of strategic variety, since only four drivers started on an alternative tyre and it made very little difference – the positions Alonso and Kimi Räikkönen gained on lap one were earned through skill as much as through superior grip. FP2 was rendered a waste of time, present only to give the morning crowd something to see. The Sprint also restored the fastest car to the front of the grid and, barring a few outliers such as Alonso, Räikkönen and Pérez, it essentially reshuffled the grid in order of race pace. Is this a good thing?

It also settled into tyre-management ho-humness quickly, as evinced by the TV footage cutting over with almost desperate urgency to replays of the start and opening lap. Still – better than determining the grid via a lottery, I suppose...

GP Racing has a podcast!

Search for 'Flat Chat with Codders' in your podcasting platform of choice.

PICTURE: JAKOB EBREY; ILLUSTRATION: BENJAMIN WACHENJE

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